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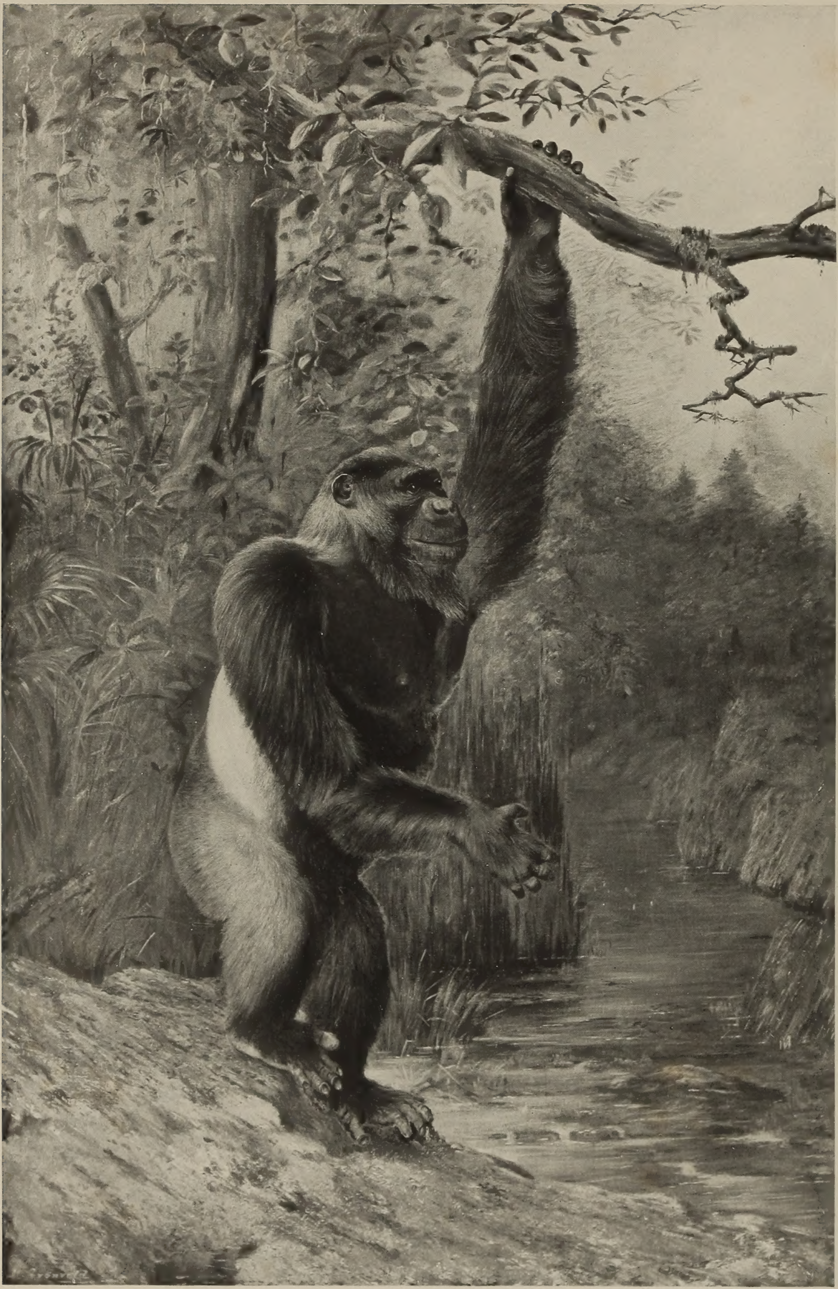

Gorilla gorilla.

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Mario Pichardo

A
REVIEW
OF
THE PRIMATES

BY

DANIEL GIRAUD ELLIOT, D. SC., F. R. S. E., &C.

Commander of the Royal Orders of the Crown of Italy, of Frederic of Wurtemburg, and of
Charles the Third of Spain; Knight of the Imperial and Royal Orders of Francis Joseph
of Austria, of the Dannebrog of Denmark, of the Albert Order of Saxony, of St.
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Royal Academy of Sciences of Lisbon, of the
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MONOGRAPH SERIES
VOLUME III

ANTHROPOIDEA
Miopithecus to Pan

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Vertebrate Paleontology
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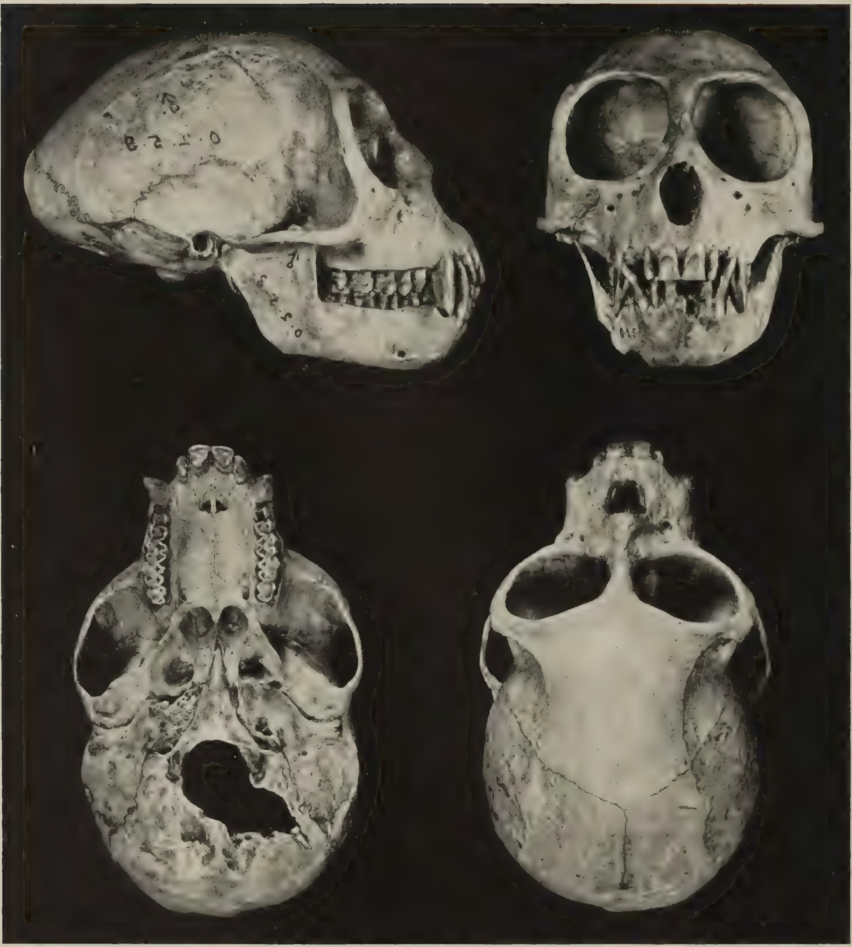


MIOPITHECUS TALAPOIN.

SIDE VIEW REVERSED.

No. 0.2.5.8. Brit Mus. Coll. 4/5 Nat. Size.

CLASS MAMMALIA.

ORDER ANTHROPOIDEA.

FAMILY LASIOPYGIDÆ.

GENUS VIII. MIOPITHECUS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

MIOPITHECUS I. Geoffroy, Comptes Rendus, XV, 1842, p. 1037.
Type *Simia talapoin* Schreber.

Size small; posterior lower molar with only three cusps; hairs in front of ears radiate from a point like a fan.

But two species of this genus are known at the present time, one from the Gaboon, M. TALAPOIN, and the other M. ANSORGEI from Angola, West Africa. They are small animals compared to the species composing the genera placed before and after them, and they differ from them structurally, in having only three cusps on the last lower molar. As the presence of a fifth cusp on the same tooth in CERCOCEBUS has been to a large degree the cause for separating the species of that genus, it would be reasonable to consider that the two species of MIOPITHECUS should also be accorded generic rank founded mainly upon tooth structure.

KEY TO THE SPECIES.

A. General hue greenish.
- *a.* Upper parts dark olive yellow.................*M. talapoin.*
- *b.* Upper parts greenish yellow..................*M. ansorgei.*

MIOPITHECUS TALAPOIN (Schreber).

Simia talapoin Schreb., Säugth., I, 1775, p. 101; Bodd., Elench. Anim., 1784, p. 59; Gmel., Syst. Nat., I, 1788, p. 101; Fisch., Syn. Mamm., 1829, p. 21.

Cercopithecus talapoin Erxl., Syst. Regn. Anim., 1777, p. 36; E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 93; Desm., Mamm., 1820, p. 56; Less., Spec. Mamm., 1840, p. 78; Martin, Mammif. Anim., 1841, p. 534; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 100; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 71; Forbes, Handb. Primates, II, 1894, p. 82; Bates, Proc. Zool. Soc. Lond., II, 1907, p. 741, pl. XLII, fig. 6.

Pithecus talapoin Blainv., Ostéog., 1841, Atl., pl. III.

Miopithecus capillatus Geoff., Compt. Rend., XV, 1842, p. 720.

Miopithecus talapoin I. Geoff., Arch. Mus. Hist. Nat., Paris, II, 1843, p. 549; *Id.* Dict. Hist. Nat., III, 1849, p. 308; *Id.* Cat. Primates, 1851, p. 18; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 20; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 741.

Simia melarhinus Schinz, Syn. Mamm., I, 1844, p. 47.

Cercopithecus (*Miopithecus*) *talapoin* Reichenb., Vollständ. Naturg. Affen, 1862, p. 103, figs. 242, 243.

THE TALAPOIN. Native name, *Ozem.*

Type locality. Unknown.

Geogr. Distr. Gaboon, Southern Cameroon, West Africa.

Color. Space around eyes orange; upper lip yellow; nose black; top of head ochraceous and black, hairs black ringed with ochraceous; upper parts of body, hairs on back gray at roots ringed with yellow and black giving them an olive or grayish tinge; black streak from corner of eye half way to ear; outer side of limbs pale yellowish sometimes tinged with red; whiskers golden yellow; some hairs brownish black at tip; under parts and inner side of limbs white; hands and feet reddish yellow; tail above black and gray mixed, beneath yellow at base, then black and yellow to nearly black at tip. Considerable variation among individuals.

Some specimens have a decided buff tint and this sometimes extends over the lower parts, overcoming the greenish hue to a large extent.

Measurements. Total length, 817; tail, 359.8; foot, 101.6. Skull: total length, 70.6; occipito-nasal length, 63.7; intertemporal width, 33.2; Hensel, 41.6; zygomatic width, 57.2; median length of nasals, .83; palatal length, 2; length of upper molar series, 15.5; length of mandible, 44.3; length of lower molar series, 19.1.

"The habits of the little 'Ozem,'" says Bates, (l. c.) "differ in some respects from those of the other kinds. It is never found far from a large stream of water, and generally keeps to trees on the very banks of streams. At villages situated near rivers, I have been told that these little monkeys steal corn from the gardens. They are quicker in their movements even than the others. Their call is very different being a little explosive 'K-sss!' that sounds like a splash of a stick thrown into the water."

Miopithecus ansorgei (Pocock).

Cercopithecus talapoin ansorgei Pocock, Proc. Zool. Soc. Lond., 1907, p. 742.

Type locality. Canhoca (not Cambaca Pocock), Angola, West Africa.

Genl. Char. Larger than M. TALAPOIN, less black on cheeks; hairs anterior to ears mostly white. Dorsal area paler and greener; ventral area pure white, hairs longer and softer.

Color. Space around eyes bright orange; nose black; black mark from corner of eye half way to ear; hairs on upper lip near nose, long, stiff, black; hairs on cheeks golden yellow, tips black, directed downward; hairs in front of ears radiating from the centre in a half circle, of a greater diameter than in M. TALAPOIN, these hairs directed downward with black tips; hairs on hinder part of cheek longest and directed backward and joining those radiating from the ear; top of head and upper part of the body yellow and black, having a strong greenish tinge; outer side of arms and legs chrome yellow; hands and feet chrome yellow with a buff tinge; entire under parts and inner side of limbs pure white; tail above brownish black on basal third, browner on remaining portion, hairs tipped with yellowish white or buff; beneath yellowish gray at base, rest buff; ear black. Ex type British Museum.

Measurements. Total length, 925; tail, 525; foot, 105; ear, 35.

This is a much yellower animal and with more of a green tint than *M. talapoin.* There are two examples in the British Museum a male, the type, and a female, and the latter is even more green than the male, and came from Casualalla, North Angola, also procured by Mr. W. J. Ansorge.

GENUS IX. ERYTHROCEBUS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

ERYTHROCEBUS Trouess., Cat. Mamm., Viv. et Foss., I, 1897, p. 17. *Type,* none designated. *C. patas* Schreber?

Size large, limbs long, slender; pelage mostly reddish; skin whitish or pale blue; face short; angle from forehead to lips abrupt; head flat on top; tail long; teeth moderate, except canines, which in the adult male are very long, curved and pointed; first two upper premolars have one outer and one inner cusp; molars with two outer cusps; second molar the larger; first lower premolar large and heavy.

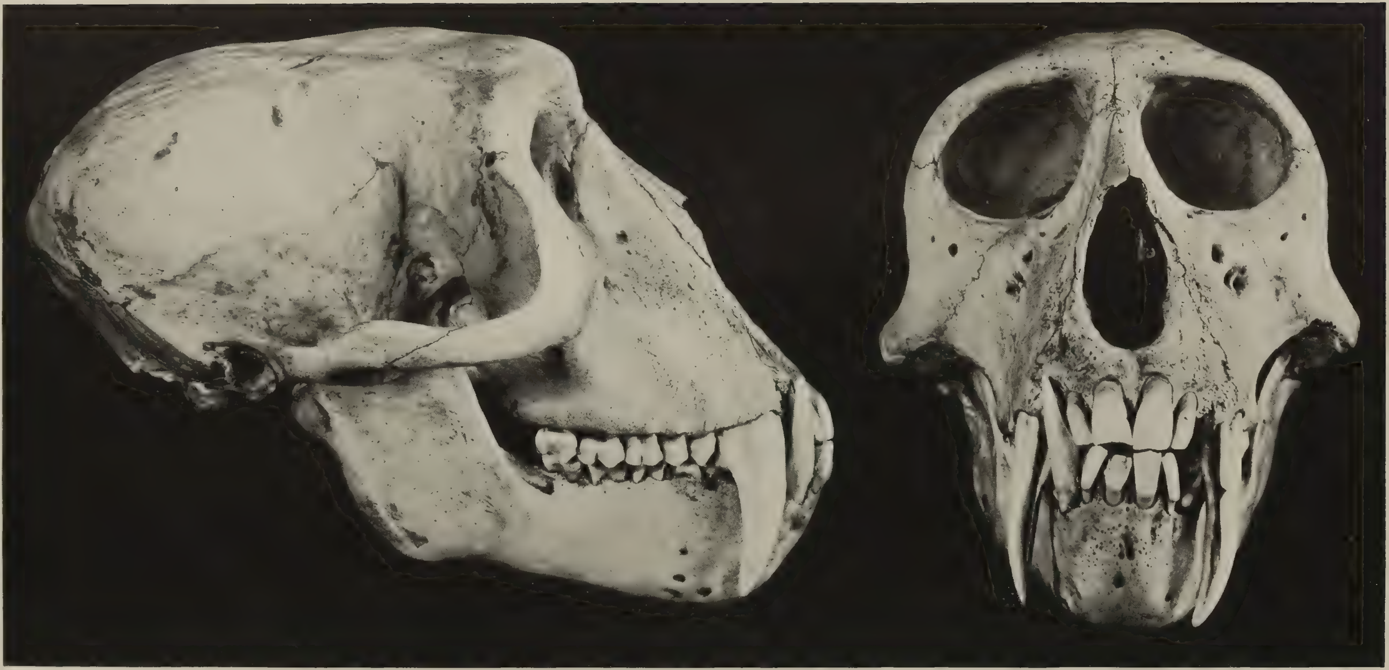
Unlike the members of the genus Lasiopyga those of the present are not arboreal in their habits, but are dwellers of the open country and the plains, and for travelling over such areas their long limbs are specially adapted. They go in small companies, and the various species appear to be quite local, and restricted in their ranges. Shy and watchful, they are very difficult to approach even within the reach of the long range rifles of the present day, and the animals easily, on the approach of danger, find concealment in the long grass that covers their accustomed haunts, and thus escape from their pursuers. On this account specimens in collections are usually few, and there is no Museum that possesses a good representation of the various species, indeed, in many institutions, they are conspicuous by their absence, or by the presence of an example of the long known *E. patas.* Of their food and habits in the wild state but little reliable information has been obtained except of *E. patas.* They are very handsome animals, and considerably larger than the species of Lasiopyga.

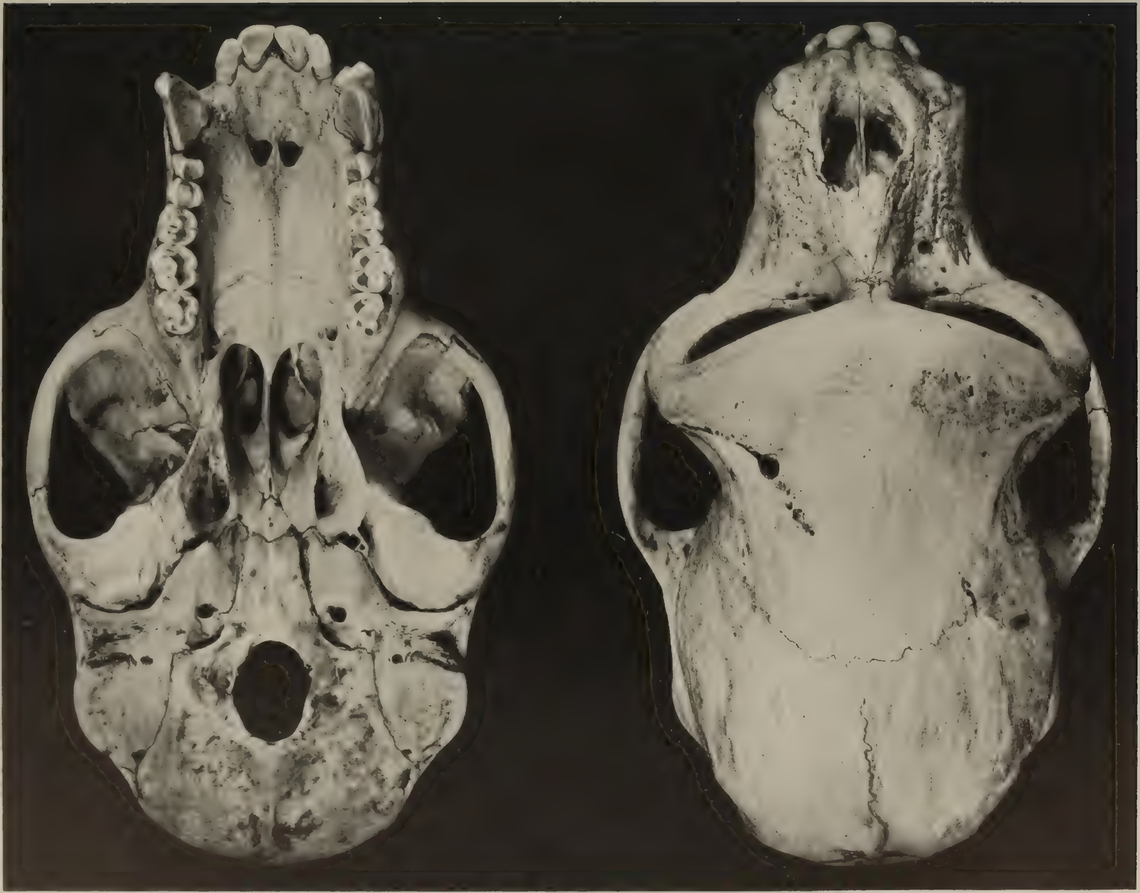
LITERATURE OF THE SPECIES.

1775. *Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen.*
Erythrocebus patas first described as *Simia patas;* and in the volume of plates a figure given called *S. rufa,* which is undeterminable, no species like it being known.

1788. *Gmelin, Systema Naturæ.*
Erythrocebus patas (Schreb.), renamed *Simia ruber.*

PLATE II.





ERYTHROCEBUS ALBIGENIS.

No. 8.6.15.1. Brit. Mus. Coll. Type. ⅘ Nat. Size.

1792. *Kerr, Animal Kingdom,* etc.
ERYTHROCEBUS PATAS redescribed as *Simia* (*Cercopithecus*) *ruber nigrofasciatus,* and *Simia* (*Cercopithecus*) *ruber albofasciatus.*

1838. *Hemprich et Ehrenberg, Symbolæ Physicæ.*
ERYTHROCEBUS PYRRHONOTUS first described.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The species of the genus ERYTHROCEBUS in this work, as is the case with nearly all Authors, are placed in the genus *Cercopithecus* (nec Gronov.). They are (*C.*) *ruber* = E. PATAS; and (*C.*) PYRRHONOTUS.

1863. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.*
ERYTHROCEBUS POLIOPHÆUS and E. CIRCUMCINCTUS first described under *Cercopithecus* (nec. Gronov.).

1905. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*
ERYTHROCEBUS KERSTINGI; E. ZECHI; E. BAUMSTARKI; and E. LANGHELDI first described under the genus *Cercopithecus* (nec Gronov.).

1906. *O. Thomas, in Annals and Magazine of Natural History.*
ERYTHROCEBUS SANNIO first described as *Cercopithecus sannio.*

1909. *D. G. Elliot, in Annals and Magazine of Natural History.*
ERYTHROCEBUS FORMOSUS and E. ALBIGENIS first described.

1910. *N. Hollister, in Proceedings of the United States National Museum.*
ERYTHROCEBUS WHITEI first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

Restricted to the African Continent, the members of ERYTHROCEBUS are about equally divided between the eastern and western portions. Beginning in the northeast we find E. ALBIGENIS in the Egyptian Soudan. In Kordofan, Darfur and Sennaar, E. PYRRHONOTUS occurs; while from the Bahr el Ghazal on the west, and in Abyssinia to an elevation of 3,000 feet, E. POLIOPHÆUS is found. In Uganda E. FORMOSUS is met with, its exact position as yet unknown; while in Masailand, British East Africa, E. BAUMSTARKI ranges, and on the Nzoia River, Guas Ngishu Plateau in the same Protectorate, E. WHITEI has been obtained. In West Africa, in Senegal E. PATAS is found, while in Togoland E. KERSTINGI and E. ZECKI, doubtfully separable from it, occur. At Lake Chad, Nigeria, E. SANNIO is met with, the only species yet discovered in that large Province, and in Cameroon, E. LANGELDI was obtained. The locality of one species E. CIRCUMCINCTUS is quite unknown, nor is there any specimen extant, a figure given by Reichenbach being the only evidence we have of its existence.

KEY TO THE SPECIES.

A. Brow band black.
  a. Shoulders not black.
    a.′ Thighs not black.
      a.″ Nose black ....*E. patas.*
      b.″ Nose white.
        a.‴ Rump and tail above ochraceous ....*E. pyrrhonotus.*
        b.‴ Rump vinaceous rufous, grading into bay on tail...........*E. formosus.*
  b. Shoulders mostly black.
    a.′ Thighs mostly reddish.
      a.″ Chin white.
        a.‴ Outer side of forearm to hand grizzled black and white.....*E. poliophæus.*
        b.‴ Outer side of forearm to hand white.
          a.⁗ Nose white ....*E. whitei.*
          b.⁗ Nose black.
            a.^{5} Chin white ....*E. kerstingi.*
            b.^{5} Chin black ....*E. zechi.*
        c.‴ Outer side of forearm to hand buff ....*E. langeldi.*
    b.′ Thighs mostly all white.
      a.″ General color rich bay...............*E. albigenis.*
      b.″ General color speckled orange buff, and white ....*E. sannio.*
B. Brow band white ....*E. circumcinctus.*
C. No brow band ....*E. baumstarki.*

ERYTHROCEBUS PATAS (Schreber).

Simia patas Schreb., Säugth., I, 1775, p. 98, pl. XVI; Bodd., Elench. Anim., 1784, p. 59.

Cercopithecus patas Erxl., Syst. Regn. Anim., 1777, p. 34; Less., Spec. Mamm., 1840, p. 84; Reichenb., Vollständ. Naturg. Affen, 1862, p. 122, figs. 304-306; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 84; Sclat., Proc. Zool. Soc. Lond., 1893, p. 249; Forbes, Handb. Primates, II, 1894, p. 63; Flower, Proc. Zool. Soc. Lond., 1900, p. 952; Holden, Proc. Zool. Soc. Lond., 1906, p. 233, fig. 60; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 742, fig. 192, pl. XLI, fig. 6.

Simia ruber Gmel., Syst. Nat., I, 1788, p. 34; Fisch., Syn. Mamm., 1829, p. 24.

Simia (*Cercopithecus*) *ruber nigrofasciatus* Kerr, Anim. Kingd., 1792, p. 71, No. 48.

Simia (*Cercopithecus*) *ruber albofasciatus* Kerr, Anim. Kingd., 1792, p. 71, No. 49.

Cercopithecus ruber E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 96; Desm., Mamm., 1820, p. 59; Less., Spec. Mamm., 1840, p. 84; Martin, Mammif. Anim., 1841, p. 509; Geoff., Dict. Hist. Nat., III, 1849, p. 307; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 42; Dahlb., Stud. Zool. Fam. Anim. Nat., fasc. I, 1856, pp. 105, 109; Reichenb., Vollständ. Naturg. Affen, 1862, p. 120, figs. 305, 307; Sclat., Proc. Zool. Soc. Lond., 1874, p. 664; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 58.

Le Patas, et le Patas à bandeau noir F. Cuv., Hist. Mamm., I, 1829, Livr. LIX, pl.

Chlorocebus ruber Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 25.

PATAS GUENON.

Type locality. Senegal, West Africa.

Geogr. Distr. Senegal, West Africa.

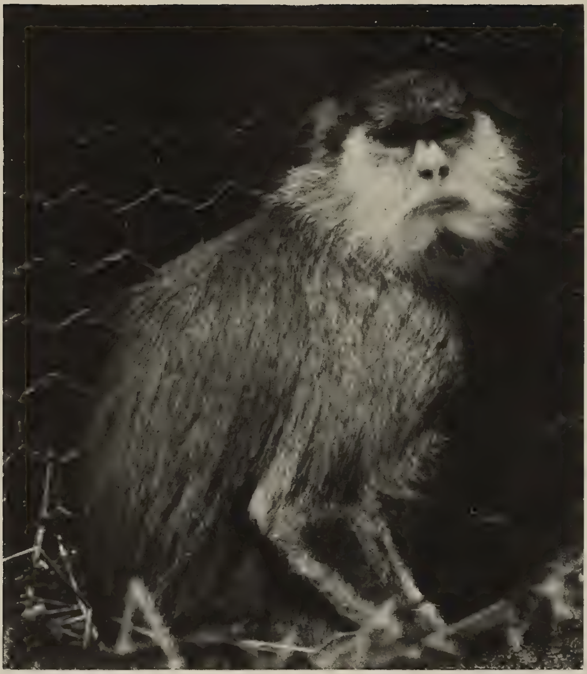
Genl. Char. Nose black at tip, ridge of nose covered by narrow line of black hairs.

Color. Face flesh color, eyelids whitish; lips, sides of face below eyes grayish white; nose black expanding to a large spot on tip; brow band black extending across temples to ears, and mixed in front with a few white hairs; whiskers extending beyond ears; sides of neck pale yellow; top of head, hind neck, upper parts of body, flanks and thighs bright orange red, the hairs red to the roots, darkest on dorsal line on upper back where the hairs are black tipped; shoulders and outer side of arms pale yellow; outer side of legs below knees yellowish white; hands and feet yellowish above, grayish white on sides; chin, throat, chest, inner side of limbs and abdomen grayish white; tail above like back growing gradually paler to tip which is cream buff; beneath buff.

Measurements. Total length, 1,115; tail, 575; foot, 135.

Schreber in the volume of plates accompanying his work, on plate XVI B gives a figure of a red monkey evidently an ERYTHROCEBUS which he names *Simia rufa.* If the coloring is correct, (there is no description), this is quite distinct from E. PATAS. The head and upper parts are red as are also the thighs, but it differs from E. PATAS in the black superciliary line not going on sides of head, and having a white line behind it. The under parts and inner side of arms to elbows and legs are white, but inner side of forearms are buff; sides of face and under parts, together with hands and feet are white, tail red like back and thighs, but the end is black. I do not know any species that is like this figure, and must place it among those that are undeterminable. Wagner makes it the same as PATAS, but if color is a criterion, and allowing for all the defects of color shown in Schreber's figures, this one cannot be considered the same as PATAS. The figure is drawn and colored in a much superior manner than is seen in the usual run of Schreber's plates, and was evidently done from an actual specimen, and not copied from some drawing.

Bennett in his "Gardens and Menagerie Delineated" gives the following account of this monkey: "In its native woods of Senegal, the *Patas,* as it is denominated by the natives, associates in large troops, which according to De la Brue, are in the habit of uniting together in the common cause against an enemy. As he passed along the river with his party, in boats, they descended from the tops of the trees and advanced to the extremity of the lower boughs, for the purpose of examining more closely the objects below. Having, for some time, attentively watched the boats, and no longer satisfied with remaining merely spectators, they began a system of offensive operations, casting dry branches and other missiles at the party, who in return, fired and killed several of the assailants. Upon this, the survivors began to utter the most frightful cries, and undauntedly redoubled their effort at annoyances; some gathered stones, others sticks, and various missiles for the purpose of hurling them at their enemies; and it was not until severely taught the inequality of the contest, that they terminated it by a retreat.



Erythrocebus pyrrhonotus.

"In captivity the *Patas* is lively, but very spiteful and capricious; as with its race in general, its evil qualities become more developed the more it advances in age, when its liveliness degenerates into irascibility, and its temper becomes morose and vindictive." A young individual "had a habit when pleased, of dancing on all-fours, in a peculiar and measured step, which was far from being ungraceful, though, after a time, it became ludicrous from its monotony."

ERYTHROCEBUS PYRRHONOTUS (Hemprich et Ehrenberg).

Ceropithecus pyrrhonotus Hempr. et Ehrenb., Symb. Phys., 1838, pl. X; Less., Spec. Mamm., 1840, p. 85; Geoff., Dict. Hist. Nat., III, 1849, p. 307; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 42; Reichenb., Vollständ. Naturg. Affen, 1862, p. 12, figs. 311, 313; Sclat., Proc. Zool. Soc. Lond., 1871, p. 623; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 84; Sclat., Proc. Zool. Soc. Lond., 1893, p. 250; Forbes, Handb. Primates, II, 1904, p. 64; Anders., Zool. Egypt. Mamm., 1902, p. 22.

Cercopithecus ruber Rüpp., Neue Wirlbeth., Säugth., 1835, p. 8; Martin, Mammif. Anim., 1841, p. 509, (Part.); Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 105, 109.

Cercopithecus patas pyrrhonotus Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 744, fig. 193.

NISNAS GUENON.

Type locality. Kordofan? Type in Berlin Museum.

Geogr. Distr. North-east Africa; Kordofan, Darfur and Sennaar, at 3,000 feet elevation.

Genl. Char. Similar to E. PATAS but the nose is white not black, and the shoulders and outer side of arms are rufous, not grayish.

Color. Top of head fox red; back of neck and on dorsal region and rump, flanks and thighs, ochraceous rufous; side of neck pale yellow; black line on head and sides of head to ears; outer side of arms above elbows, ochraceous, hairs black tipped; cheeks, throat, under parts of body, inner side of limbs, forearms, legs below knees, hands and feet grayish white, hairs of cheeks black tipped; tip of nose white; tail above fox red, beneath yellowish white; hair on ridge of nose black; tuft of hairs inside of ears whitish. Ex Hemprich et Ehrenberg's type in Berlin Museum.

Measurements. Total length, 1,205; tail, 650; foot, 130. Skull: total length, 143; occipito-nasal length, 115; Hensel, 106; intertemporal width, 45.5; zygomatic width, 88; median length of nasals, 18; length of upper molar series, 32; length of mandible, 106; length of lower molar series, 41. Ex Hemprich et Ehrenberg's type in Berlin Museum.

ERYTHROCEBUS FORMOSUS Elliot.

Erythrocebus formosus Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 264.

Type locality. Uganda, particular locality not known. Type in British Museum.

Genl. Char. Similar to E. PYRRHONOTUS, but with a much darker rump and tail, more black on shoulders, and under parts of body buff pink, instead of grayish white, with a pale yellow line down center of belly.

Color. Head, face and cheeks like E. PYRRHONOTUS, with white patch on end of nose; the black brow line is not distinct between eye and ear, and turns up over the crown from corners of the eyes as in the allied form; top of head fox red; head above ear, nape, hind neck and shoulders ochraceous buff, hairs yellow tipped; lower back to rump and flanks pinkish, hairs tipped with yellow, this last giving a yellow effect to all the upper parts; rump vinaceous rufous grading into bay at tail and hips; sides of neck and chest lemon yellow, some hairs tipped with black; outer side of arms lemon yellow; inner side of arms and hands white; under parts of body buff pink with a yellow line down center of belly; chin, throat and center of chest white, this hue narrowing to a point on lower part of chest as it is encroached upon by the lemon yellow color on each side; outer side of thighs in front to knees like rump, on sides pale yellow; below knees the legs and feet are white; inner side of thighs and legs grayish white; tail bay, slightly paler at tip. Ex type British Museum.

Measurements. Total length, 1,410; tail, 740; foot, 145, (skin). Ex type British Museum.

This is a large species resembling E. PYRRHONOTUS on upper parts except on rump which with the tail is much darker, in fact quite a different color; the thighs are also unlike those of E. PYRRHONOTUS, and the under parts have the sides of neck, chest and arms lemon yellow quite different from the gray chest and yellowish white arms of the allied species, and the under parts of the body are altogether different, of a color difficult to describe, but which I have called buff pink. Unfortunately there is no skull.

The only species of ERYTHROCEBUS dwelling near this one, is

E. BAUMSTARKI from Masailand, but as that animal has no black on brow or head it cannot be compared with the present one.

ERYTHROCEBUS POLIOPHÆUS (Reichenbach).

Cercopithecus poliophæus Reichenb., Vollständ. Naturg. Affen, 1862, p. 122, fig. 309; Heugl., Faun. d. Roth Meeres, p. 13; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. Fagzohl, Blue Nile, on border of Western Abyssinia.

Genl. Char. Shoulders mostly black, chin white.

Geogr. Distr. Abyssinia, Bahr el Ghazal.

Color. Face black; two black stripes from eye to ear, and a branch to top of head; crown of head fox red, and back of neck bright reddish brown; upper part and sides of body dark reddish, hairs tipped with white; cheeks, sides of head, throat, breast and inner side of limbs white; under parts yellowish white; shoulders and outer side of arms to elbows black; forearms white, speckled; hands white; thighs on outer side deep red; legs below knees, and feet, white; upper part of tail dark purple red, beneath white; ears black; hairs on upper lip white. Size about same as E. PYRRHONOTUS. Head and body, 620; tail, 680; foot, 175. Ex specimen Vienna Museum, obtained by Heuglin. White Nile.

Measurements. Skull: total length, 122.1; occipito-nasal length, 106.6; intertemporal width, 50; Hensel, 82.3; zygomatic width, 75.3; width of braincase, 69.3; median length of nasals, 27; palatal length, 38.6; length of upper molar series, 31.6; length of mandible, 81.4; length of lower molar series, 37.1.

This species resembles E. PYRRHONOTUS, but differs in being of a darker red color, and in having black shoulders.

It will readily be seen on comparison that the proportions between the skull of this species and that of E. ALBIGENIS are altogether different, this one being much shorter and broader, in fact of an altogether different shape. The black and white forearms, speckled rump, and black band from eye to ear will cause E. POLIOPHÆUS to be easily recognized from its near relatives.

ERYTHROCEBUS WHITEI Hollister.

Erythrocebus whitei Hollister, Smith. Misc. Coll., 56, No. 2, 1910, p. 11.

Type locality. Nzoia River, Guas Ngishu Plateau, British East Africa. Type in United States National Museum.

Genl. Char. Forearms, to and including hands, yellowish white; nose white.

Color. Nose, lips and cheeks yellowish or cream white; brow band black, with long white hairs intermingled, this band extending back to ear where it forks, the short arm going to beneath ear, the long arm on either side of crown to nape; crown chestnut bay; nape and upper parts grizzled cinnamon rufous; the hairs cinnamon rufous at base, bay on terminal half, a subterminal band of buff, and tip black; shoulders and arms to elbows grizzled, with black dominating; a cinnamon rufous stripe from middle of back to tail; rump dark bay; thighs nearly to knees bay, paler than rump; outer side of thighs, beneath the bay color, and legs to ankles white; inner side of limbs white; under parts scantily haired, ochraceous, or ochraceous buff, the tips of hairs white; hands and feet yellowish white; tail above bay, beneath white. Ex type United States National Museum.

Measurements. Total length, 870; tail, 640, (skin). Skull: total length, 149; occipito-nasal length, 114.4; Hensel, 118.3; zygomatic width, 98.5; intertemporal width, 70.8; palatal length, 68; median length of nasals, 22.7; length of upper molar series, 32.1; length of mandible, 118.4; length of lower molar series, 41.7. Ex type United States National Museum.

This species singularly enough is nearest to E. KERSTINGI from West Africa. Two specimens were obtained, both males. They were in troops of from four to a dozen, in entirely open country and were very difficult to approach.

My friend the Rev. Dr. W. S. Rainsford, who obtained this monkey in East Africa, (specimen presented to Am. Mus. Nat. Hist., N. Y.,) says: "The monkey, (Erythrocebus whitei) I shot on the N'soia Plateau. It is a very shy and very active species living on a level country where there are no high trees, often no trees at all. Indeed it avoids high and thick woods, where other monkeys are usually found. This flat country is so infested with lions and leopards that all the activity and cunning of the native is frequently called into play to escape them. I have even known lions of that region to hunt down and devour a cheetah.

"I saw the monkeys several times but only once did I succeed in getting a shot. I never saw more than three of them together and I found them harder to stalk than any other animal I followed in Africa."

Erythrocebus kerstingi (Matschie).

Cercocebus kerstingi Matsch., Sitzungsb. Gesell. Naturf. Freunde, 1905, p. 274; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. Sokode, Togoland, West Africa. Type in Berlin Museum.

Genl. Char. Like E. PATAS, but ochraceous rufous above instead of fox red.

Color. Top of head dark ochraceous rufous, paler on sides, hairs tipped with black; back of neck, upper part and inner side of thighs ochraceous rufous, hairs tipped with buff, giving a yellowish tinge over all the body; narrow line on forehead extending backward to ears black; nose black; lips white; cheeks grayish white, hairs tipped with black; sides of neck yellowish, shoulders gray, hairs tipped with black; forearms and legs below knees, throat, chest, under parts of body and inner side of limbs grayish white; tail above dark fox red, beneath white. Ex type Berlin Museum.

Measurements. Total length, 1,620; tail, 760. Skull: total length, 150; occipito-nasal length, 121; Hensel, 104; intertemporal width, 51; zygomatic width, 93; median length of nasals, 22; length of upper molar series, 31.5; length of mandible, 106; length of lower molar series, 42. Ex type Berlin Museum.

This form is precisely like E. PATAS in its markings and distribution of colors, but is not so red on upper parts, the shade being an ochraceous rufous darkest on center of head. A specimen in the British Museum from Lagos, seems referable to this form.

Erythrocebus zechi Matschie.

Erythrocebus zechi Matschie, Sitzungsb. Ges. Naturf. Freunde, 1905, p. 276.

Cercopithecus zechi Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. ——— ? Togoland, West Africa. Type in Berlin Museum.

Genl. Char. Exactly like E. KERSTINGI, a little paler on sides of body, and with a black chin.

The type is a young animal and has not acquired the fully adult coloring, the forearms and legs being still yellow, not grayish white like the adult.

The differences relied upon for separating this form from E. KERSTINGI are very slight, only the upper parts a little paler red and the black chin. The latter however is said to be constant. Ex type Berlin Museum.

ERYTHROCEBUS LANGELDI Matschie.

Erythrocebus langeldi Matsch., Sitzungsb. Gesell. Naturf. Freunde, 1905, p. 276.

Cercopithecus langeldi Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. Garu, Cameroon, West Africa. Type in Berlin Museum.

Genl. Char. Nose black; tail rather short.

Color. Top of head ochraceous rufous; upper parts of body reddish orange buff; flanks orange buff; black line across forehead extending backward to ears; hairs on fore part of cheeks brownish black, hind part white; sides of neck, arms and legs below knees, buff; lips and chin with black and white hairs mixed; throat white, rest of under parts and inner side of arms yellowish white; thighs orange buff; inner side of legs white; hands and feet silvery white with buff centers; tail like back at root, remainder above ochraceous buff, beneath whitish. Ex type Berlin Museum.

Measurements. Total length, 905; tail, 325. Ex type Berlin Museum.

There are two specimens of this form in the Berlin Museum one of which is quite immature, and that is the type. It is so young I have not deemed it worth while to give the dimensions of the skull. Unfortunately of the older and larger example there is no skull. Both specimens agree in color, and are much darker than E. BAUMSTARKI, and also have the black stripes on head.

ERYTHROCEBUS ALBIGENIS Elliot.

Erythrocebus albigenis Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 265.

Type locality. "Egyptian Soudan"; exact locality not known. Type in British Museum.

Genl. Char. Black brow band extending to crown, not to ear; thighs mostly white. Hair on hind neck and shoulders very long, mane-like.

Color. Adult male. Face and nose black; narrow line on edge of upper lip white; black brow band mixed with white over eyes, turning upward at corner of eyes and encircling the crown; no black line from eye to ear; crown of head fox red; rest of head and hind neck tawny ochraceous, hairs with a subterminal yellow band and black tips; rest of dorsal region dark ochraceous rufous becoming a bright bay on flanks and rump; hairs tipped with golden, only occasionally one with a black tip; shoulders covered with long black hairs annulated with cream color; side of face white; whiskers and sides of neck white tinged with yellow; inner and outer side of arms white, hands grayish white; upper parts of thighs around hips bright bay like rump; rest of thighs and legs, inner and outer sides, white; feet yellowish white; chin, throat and chest white; middle of abdomen pale yellow; tail bay above, beneath yellowish white. Ex type British Museum.

Measurements. Total length, 1,070; tail, imperfect, 430; foot, 140, (flat skin). Skull: total length, 135; occipito-nasal length, 114; intertemporal width, 47.3; Hensel, 94.7; zygomatic width, 80; breadth of braincase, 59.3; median length of nasals, 25.2; palatal length, 47.7; length of upper molar series, 29.7; length of upper canines, 34.7; length of mandible, 81.8; length of lower molar series, 36.6. Ex type British Museum.

The skull is long and narrow, the length of cranium from the anterior edge of orbital ridge to occiput being nearly twice the breadth; rostrum rather long and nearly of equal width, being but slightly broader posteriorly; narial opening broad for the length; no depression behind orbital ridges, the superior outline being nearly level beginning to descend about the middle of the parietal; palate long, deep and narrow; canines very long, curved and pointed.

This form is distinguished from E. POLIOPHÆUS by having white forearms, no black line from eye to ear, thighs white not reddish, much deeper color of the upper parts of the body, and the rump unspeckled. The skull is much longer and narrower, the middle molar larger, the last molar and the second premolar smaller than the corresponding teeth in E. POLIOPHÆUS. The exact locality of the unique type which was received by the British Museum from Captain Flower, Director of the Zoological Gardens in Ghiza, Egypt, is unknown, the only statement given is that it was brought from the Egyptian Soudan.

ERYTHROCEBUS SANNIO (Thomas).

Cercopithecus sannio Thos., Ann. Mag. Nat. Hist., 7th Ser., XVII, 1906, p. 173; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. Go, Lake Chad. Type in British Museum.

Color. Face brownish black, paler about eyes; a narrow line along ridge of the nose, broadening out and forming a large patch on the end, black; band across brow, and extending over temples to ears, but not branching upwards to crown, black; top and back of head rufous, speckled with black on outer edge; neck and upper back extending over shoulders, hairs pinkish buff annulated with cream buff, and tipped with black; rest of upper parts dark orange buff, hairs annulated with white on dorsal line and lower back, but not on rump, the tips are black, the annulations, however, are more conspicuous than the black tips, and give a frosted appearance to the upper parts; rump rather deeper in color than back, and without annulations towards root of tail; flanks like upper parts; hairs below eyes on upper part of cheeks, mixed black and white; whiskers long, extending beneath and beyond ears, grayish white becoming cream buff at end of hairs; sides of neck cream buff; lips, chin, throat, chest, narrow line down middle of belly, forearms, hands, legs and feet, white; arms above elbows on outer side covered with long black and white hairs, the black predominating towards the shoulders; sides of belly buff; tail above ochraceous rufous at base, growing paler towards the tip which is cream buff; beneath white, tinged with buff at tip. Ex type British Museum.

Measurements. Total length, 1,350; tail, 720; foot, 172, (taken in the flesh). Skull: total length, 143; occipito-nasal length, 127.5; intertemporal width, 47.3; Hensel, 98.2; zygomatic width, 88.5; width of braincase, 63.2; median length of nasals, 24.8; palatal length, 49; length of upper molar series, 29.8; length of upper canines, 28.5; length of mandible, 99.3; length of lower molar series, 38.4. Ex type British Museum.

This form seems to be entitled to a distinct specific rank instead of being regarded as a subspecies of E. PATAS. Indeed it may be said to belong to a different group from that which E. PATAS represents, that one having the legs from thighs downward pure white. The type is a large, fully adult male. It differs materially from PATAS in its grayish black shoulders instead of pale yellow, in its white thighs and in the paler upper parts of body.

ERYTHROCEBUS CIRCUMCINCTUS Reichenbach.

Cercopithecus circumcinctus Reich., Vollständ. Naturg. Affen, 1862, p. 123, pl. XXI, fig. 310; Pocock, Proc. Zool. Soc. Lond., II, 1907, p. 745.

Type locality. Unknown. "West Africa."

Reichenbach (l. c.) has given a figure of a red *Cercopithecus,* (ERYTHROCEBUS), with a white brow band and white whiskers surrounding the face, which he named *circumcinctus.* I have not seen any example of this genus which resembles this animal. It is not known where Reichenbach's type was obtained, and it is not now in the Dresden Museum, and may never have been there, for it is well known that Reichenbach included many species in his book which were not in the Dresden Collection, but which he obtained by loan from various persons and Institutions; and some possibly he never saw at all, but copied the figures from the published works of various authors. His description of *Cercopithecus* (nec Gronov.), CIRCUMCINCTUS is as follows: *C. circumcinctus* Reich. "Patas mit scharzen, weiss eingerahmten Gesicht, Röthelfarbig Stirnband und Umgebungen das schwarze Gesicht und Kinn, sowie die Unterseite und Innenseite der Gliedmassen weiss. Befand sich im J. 1830 hier lebendig und wurde von unserm Thiermaler Herrn W. Wegener, skizziet und mir gefällig mitgetheilt. Die angeführten Kennzeichen unterschieden ihn sehr bestimmt von seinen Nachbarn Wahrscheinlich aus dem westlichen Afrika."

ERYTHROCEBUS BAUMSTARKI Matschie.

Erythrocebus baumstarki Matsch., Sitzungsb. Gesell. Naturf. Freunde, 1905, p. 273.

Cercopithecus baumstarki Pocock, Proc. Zool. Soc. Lond., II, 1909, p. 745.

Type locality. Ikoma, Masailand, East Africa. Type in Berlin Museum.

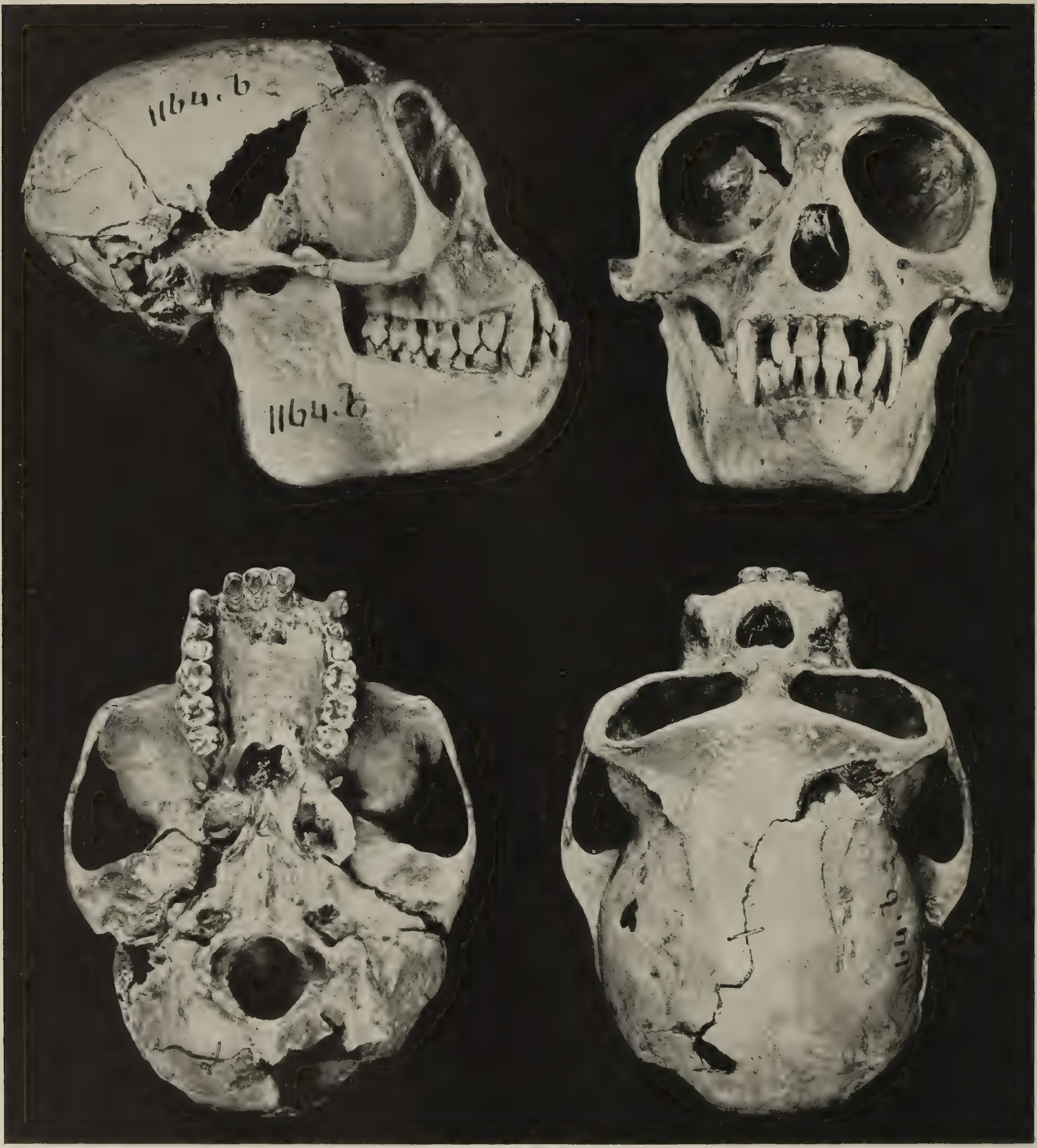
Genl. Char. No black on forehead or on side of head; similar to E. LANGELDI, but head and limbs paler.

Color. Top of head and dorsal region reddish orange buff; (not orange rufous Matschie); back of head buff, mixed with long black hairs; sides of head and neck yellowish white; flanks orange buff paler than dorsal line, and not so red; shoulders and arms grayish white, black hairs intermingled; thighs buff; legs buffy white; under parts yellow, and inner side of limbs yellowish white; hands and feet grayish white, with dark brown hairs intermingled; tail at base like dorsal line, remainder ochraceous buff, paler beneath. Ex type Berlin Museum.

Measurements. Total length, 1,080; tail, 500. Skull: total length, 109; occipito-nasal length, 93; Hensel, 70; intertemporal width, 47; zygomatic width, 66; median length of nasals, 20; length of upper molar series, 28; length of mandible, 76.5; length of lower molar series, 28. Ex type Berlin Museum.

This form is peculiar in not having any black on head, the usual black stripes seen on E. PATAS and its allies being absent. It is also of a paler color on head, limbs and flanks, the dorsal region, however, being of the same hue as that of E. LANGELDI.

PLATE III.


1164.b
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1164.b

Pygathrix melanolophus.

No. 1164.b. Brit. Mus. Coll. 4/5 Nat. Size.

Subfamily 2. Colobinæ.

GENUS I. PYGATHRIX.

$$\text{I. }\frac{2-2}{2-2};\quad \text{C. }\frac{1-1}{1-1};\quad \text{P. }\frac{2-2}{2-2};\quad \text{M. }\frac{3-3}{3-3}=32.$$

PYGATHRIX E. Geoffroy, Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 90. Type *Simia nemæus* Linnæus.

Presbytis Esch., Kotz. Entd-Reise Süd-See u.n. Berings-Strass., &c., III, 1821, p. 196, pl.

Semnopithèque F. Cuv., Hist. Nat. Mamm., III, 1821, Livr. XXX, pl.

Semnopithecus F. Cuv., Dents Mamm., 1825, p. 247, pl. IV.

Trachypithecus Reichenb., Vollständ. Naturg. Affen, 1862, p. 89, pls. XV, XVI, figs. 198-225.

Kasi Reichenb., Vollständ. Naturg. Affen, 1862, p. 101, pl. XVII, figs. 234, 235, 240, 241.

Entellus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14.

Corypithecus Trouess., Rev. Mag. Zool., 3me Sér., VII, 1879, p. 53.

Lophopithecus Trouess., Rev. Mag. Zool., 3me Sér., VII, 1879, p. 53.

Presbypithecus Trouess., Rev. Mag. Zool., 3me Sér., VII, 1879, pp. 52, 56.

Body slender, elongate; tail long, slender; limbs long; head round; muzzle short; thumb short with a flat nail; cheek pouches absent; laryngeal sac present; ridge of stiff hairs projecting forward over eyes. Skull with rounded braincase; large orbits; projecting superciliary ridge; upper molars with four cusps; posterior lower molar with five cusps. Stomach large, pouches several.

The Langurs, as the members of the genus Pygathrix are usually called, resemble, in general appearance, the Guenons of the genus Lasiopyga, but are distinguished from them outwardly, by the short thumb, absence of whiskers, and the shorter muzzle; while the head is often ornamented by the elongation of the hairs on the occiput; and internally they differ from all the Old World Primates, except the species of COLOBUS, in the large, many pouched stomach. In some species the hair on top of the head radiates from a central point, sometimes overhanging the forehead. The Langurs are eminently arboreal, though able to traverse the ground with considerable speed, and live in the forests, subsisting on leaves and fruits, though they are not averse to certain kinds of grain. Some species live at low altitudes, while others dwell on high mountains, some not descending below 2,000 feet, while others remain amid the snow seeming to enjoy the low temperature, and play about the snow covered branches. They are exceedingly active and quick in their movements, and in India, where one species at least is considered sacred by many of the inhabitants, they do much damage to the gardens and fields, and often enter the villages and help themselves at the shops to such things as tempt their appetites. They are not so gaily colored as the majority of the *Cercopitheci* but some few have beautiful coats, those of the red species being, occasionally, brilliant. The tail is very long, usually carried low, but at times raised over the back. They go in troops, sometimes of large numbers, and are generally peacefully inclined among themselves, though sometimes the old males have severe fights, ending at times in the death of one of the combatants. They do not bear captivity well, and usually soon succumb.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1758. *Linnæus, Systema Naturæ.*
PYGATHRIX AYGULA first described as *Simia aygula.*

1771. *Linnæus, Mantissa Plantarum.*
P. NEMÆUS first described as *Simia nemæus.*

1775. *Schreber, Die Säugthiere.*
Simia maura plate XXII B, undeterminable.

1777. *Erxleben, Systema Regni Animalis.*
Simia senex ex Ceylon described, but undeterminable, probably an albino individual of one of the Ceylonese species of *Pygathrix.*

1780. *Zimmermann, Geographische Geschichte des Mennschen, etc.*
PYGATHRIX CEPHALOLOPTERA first described as *Simia cephalopterus* (!)

1797. *Dufrèsne, in Bulletin de la Société Philomatique de Paris.*
PYGATHRIX ENTELLUS first described as *Simia entellus.*

1812. *E. Geoffroy, in Annales du Muséum d'Histoire Naturelle, Paris.*

In this paper the Author creates the genus PYGATHRIX with *Simia nemæus* Linn., as the only species and type, and in the genus *Cercopithecus* (LASIOPYGA), the following members of PYGATHRIX are placed: (*C.*) *maurus* (nec Schreb.), ex Java = (*C.*) AURATUS Geoff., first described; (*C.*) *latibarbatus* Geoff., = P. CEPHALOLOPTERA (Zimm.), and (*C.*) ENTELLUS Dufrèsn. The species of PYGATHRIX in this paper were considered cogeneric with those of *Cercopithecus* (nec Gronov.), = (LASIOPYGA), and their characters were overlooked.

1821. *Horsfield, Zoological Researches in Java.*
PYGATHRIX AURATA E. Geoff., redescribed as *Semnopithecus pyrrhus.*

1821. *Raffles, in Transactions of the Linnæan Society of London.*
PYGATHRIX MELANOLOPHA first described as *Simia melalophus*!

1821. *Escholtz, in Kotzebue Reise in die Süd-See und nach der Berings-Strasse zur Erforschung einer nordöstlichen Durchfahrt.*
PYGATHRIX AYGULA redescribed as *Presbytis mitrata.*

1822. *Raffles, in Transactions of the Linnæan Society of London.*
PYGATHRIX CRISTATA first described as *Simia cristatus.*

1823. *Desmarest, Mammalia. Supplement.*
PYGATHRIX CRISTATA redescribed as *Semnopithecus pruinosus;* and PYGATHRIX AYGULA as *S. comatus.*

1825. *Desmoulin, in Dictionnaire Classique d'Histoire Naturelle.*
PYGATHRIX AURATA redescribed as *Simia ceylonicus;* and PYGATHRIX CEPHALOLOPTERA redescribed as *Semnopithecus fulvogriseus.*

1825. *Otto, in Nova Acta, Kaiserliche Leopoldino Carolinische Deutsche Akademie der Naturforscher.*
PYGATHRIX CEPHALOLOPTERA redescribed as *Cercopithecus leucoprymnus.*

1829. *Fischer, Synopsis Mammalium.*
In this work under the genus SIMIA the following species of PYGATHRIX are given: (*S.*) NEMÆUS; (*S.*) ENTELLUS; (*S.*) MELANOLOPHA; (*S.*) AURATA; (*S.*) *edwardsi* = P. AURATA; (*S.*) *fulvogriseus* = P. CEPHALOLOPTERA; (*S.*) *comata* = P. AYGULA; (*S.*) *leucoprymna* = P. CEPHALOLOPTERA; (*S.*) CEPHALOLOPTERA; and (*S.*) JOHNI.

1830. *Horsfield, in Life of Raffles. Appendix.*
PYGATHRIX FEMORALIS first described as *Semnopithecus femoralis.*

1830. *I. Geoffroy Saint-Hilaire, in Lesson Centurie Zoologique.*
PYGATHRIX MELANOLOPHA redescribed as *Semnopithecus flavimanus.*

1833. *Bennett, in Proceedings of the Zoological Society of London.*
PYGATHRIX CEPHALOLOPTERA redescribed as *Semnopithecus nestor.*

1834. *I. Geoffroy Saint-Hilaire, in Bélanger Voyage aux Indes-Orientales; Mammifères.*
PYGATHRIX JOHNI redescribed as *Semnopithecus cucullatus.*

1837. *Reid, in Proceedings of the Zoological Society of London.*
PYGATHRIX OBSCURA first described as *Semnopithecus obscurus.*

1838. *Müller, in Tijdschrift voor Natuurlijke Geschiedenis en Physiologie.*
PYGATHRIX CHRYSOMELAS first described as *Semnopithecus chrysomelas;* and PYGATHRIX RUBICUNDA first described as *Semnopithecus rubicundus.*

1839. *Müller und Schlegel, in Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche overzeesche bezittingen, etc.*
PYGATHRIX SUMATRANA first described as *Semnopithecus sumatranus;* and PYGATHRIX ENTELLUS redescribed as *Semnopithecus albogularis?*

1840. *Hodgson, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX SCHISTACEA first described as *Semnopithecus schistaceus.*

1840. *Wagner, Schreber, Die Säugthiere. Supplement.*
PYGATHRIX JOHNI redescribed as *Semnopithecus jubatus.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
A list of the species of PYGATHRIX, as known to the Author, is here given under the genus *Semnopithecus* with synonymy and descriptions. The species are (*S.*) NEMÆUS; (*S.*) ENTELLUS; (*S.*) *leucoprymnus* = PYGATHRIX CEPHALOLOPTERA; (*S.*) *cucullatus* = P. JOHNI; (*S.*) *bicolor* undeterminable; (*S.*) *nestor* = P. CEPHALOLOPTERA; (*S.*) *flavimanus* = P. MELANOLOPHA; (*S.*) MELANOLOPHUS; (*S.*) *comatus* = P. AYGULA; (*S.*) *pruinosus* = P. CRISTATA; (*S.*) AURATUS; (*S.*) *pyrrhus* = P. AURATA; (*S.*) *albogularis* = P. ENTELLUS; (*S.*) *kra* = PITHECUS FASICULARIS; and (*S.*) OBSCURUS.

1841. *Blyth, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX BARBEI first described as *Presbytis barbei;* and PYGATHRIX PILEATA first described as *Semnopithecus pileata.*

1841. *Müller und Schlegel, in Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche overzeesche bezittingen, etc.*
PYGATHRIX SIAMENSIS first described as *Semnopithecus siamensis.*

1842. *I. Geoffroy St. Hilaire, in Comptes Rendus.*
PYGATHRIX HYPOLEUCA redescribed as *Semnopithecus dussumieri.*

1842. *Gray, in Annals and Magazine of Natural History.*
PYGATHRIX NOBILIS first described as *Presbytis nobilis.*

1843. *Blyth, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX BARBEI first described as *Presbytis barbei;* and PYGATHRIX PILEATA first described as *Semnopithecus pileata.*

1843. *I. Geoffroy St. Hilaire, in Archives du Muséum d'Histoire Naturelle, Paris.*
P. SIAMENSIS Müll. und Schleg., redescribed as *Semnopithecus nigrimanus.*

1844. *Blyth, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX ENTELLUS redescribed as *Semnopithecus anchises;* and PYGATHRIX PRIAM first described as *Semnopithecus priam.*

1844. *Blyth, in Annals and Magazine of Natural History.*
PYGATHRIX PRIAM redescribed as *Semnopithecus pallipes.*

1847. *Blyth, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX PHAYREI first described as *Semnopithecus phayrei;* and PYGATHRIX PRIAMUS redescribed as *Presbytis thersites.*

1849-50. *Kelaart, in Journal of the Royal Asiatic Society, (Ceylon branch).*
Pygathrix cephaloloptera monticola first described as *Presbytis cephalopterus* (!) *monticola.*

1851. *Blyth, in Horsfield's Catalogue of Mammals in the Museum of the East India Company.*
PYGATHRIX PHAYREI redescribed as *Semnopithecus argentatus.*

1851. *Blyth, in Journal of the Asiatic Society of Bengal.*
PYGATHRIX URSINA first described as *Presbytis ursina.*

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
PYGATHRIX ENTELLUS redescribed as *Semnopithecus albipes,* (albinistic).

1852. *Kelaart, Prodromus Faunæ Zeylanicæ.*
PYGATHRIX CEPHALOLOPTERA redescribed as *Presbytis albinus.*

1856. *Bonaparte, in Comptes Rendus.*
PYGATHRIX POTENZIANI first described as *Semnopithecus potenziani.*

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.* The species of PYGATHRIX are in this work placed in *Semnopithecus,* with subgenera *Trachypithecus, Semnopithecus, Maurus,* and *Kasi,* as follows: (*S.*) *pruinosus* = P. CRISTATA; *S. maurus* undeterminable, possibly = P. AURATA; (*S.*) CHRYSOMELAS; (*S.*) MELALOPHUS (!); (*S.*) SUMATRANUS; (*S.*) CRISTATUS; (*S.*) FRONTATUS; (*S.*) AURATUS; (*S.*) RUBICUNDUS; (*S.*) *pyrrhus* = P. AURATA; (*S.*) *comatus* = P. AYGULA; (*S.*) SIAMENSIS; (*S.*) NOBILIS; (*S.*) PILEATUS; (*S.*) *flavimanus* = *P.* MELANOLOPHA; (*S.*) MELALOPHUS (!); (*S.*) *albigena* is a CERCOCEBUS; (*S.*) ENTELLUS; (*S.*) PRIAMUS; (*S.*) *anchises* = P. ENTELLUS; (*S.*) *thersites* = P. PRIAMUS; (*S.*) SCHISTACEUS; (*S.*) HYPOLEUCUS; (*S.*) *atys,* undeterminable; (*S.*) *albipes* = P. ENTELLUS; (*S.*) *dussumieri* = P. HYPOLEUCA; (*S.*) *albocinereus,* undeterminable; (*S.*) CEPHALOLOPTERUS; (*S.*) *cucullatus* = P. JOHNI; (*S.*) *leucomystax* Müll. und Schleg., = P. OBSCURA (Reid); and (*S.*) *nigrimanus* Geoff. = P. SIAMENSIS Müll. und Schleg.

1870. *Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*
In this List the members of PYGATHRIX are included in two genera LASIOPYGA, and *Semnopithecus.* The first is made to contain NEMÆUS Linn., which is an error, for NEMÆUS is the type of PYGATHRIX, and the type of LASIOPYGA is *Simia* NICTITANS Linn. The species placed in *Semnopithecus* are (*S.*) *leucoprymnus* = PYGATHRIX CEPHALOLOPTERA; (*S.*) OBSCURUS Reid; (*S.*) JOHNI; (*S.*) ENTELLUS; (*S.*) *albipes* = PYGATHRIX ENTELLUS; (*S.*) *maurus* = PYGATHRIX AURATA; (*S.*) CRISTATUS; (*S.*) FEMORALIS; (*S.*) FRONTATUS; (*S.*) *mitratus* = PYGATHRIX AYGULA; (*S.*) SIAMENSIS; (*S.*) MELANOLOPHUS; (*S.*) NOBILIS; and (*S.*) RUBICUNDUS.

1871. *A. Milne-Edwards, in Archives du Muséum d'Histoire Naturelle, Paris.*
PYGATHRIX NIGRIPES first described as *Semnopithecus nigripes.*

1875. *Blyth, Catalogue of Mammals and Birds of Burma.*
PYGATHRIX BARBEI redescribed as *Presbytis cristatus.*

1876. *A. Milne-Edwards, in Bulletin de la Société Philomatique.*
PYGATHRIX GERMAINI first described as *Semnopithecus germaini.*

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*
The species of PYGATHRIX in this Review are all placed in the

genus *Semnopithecus.* The Author begins with those species not represented in the Leyden Museum, viz.: (*S.*) GERMAINI Milne-Edw., (*S.*) NIGRIPES A. Milne-Edw., and (*S.*) PILEATUS; of which three he gives descriptions. Of three species he had no personal knowledge: (*S.*) PHAYREI; (*S.*) BARBEI; and (*S.*) PRIAMUS. (*S.*) *albipes* = P. ENTELLUS he considers distinct. The remaining examples he divides into two groups, as *Semnopitheci Veri,* and *Semnopitheci Abnormes,* the latter containing S. NEMÆUS (Linn.); S. ROXELLANÆ A. Milne-Edwards; and *S. nasica* = N. LARVATUS Wurmb. Only the first of these, NEMÆUS belongs to PYGATHRIX, the others being members of other genera, RHINOPITHECUS, and NASALIS respectively. The first group is divided into two sections: I. "Espèces pourvues d'une huppe comprimée," and II. "Point de huppe proprement dite." The first of these has six subdivisions, according to the style of crest and color of pelage, A-F. A. has (*S.*) FRONTATUS; B. (*S.*) RUBICUNDUS; C. (*S.*) *mitratus* (Escholtz), = PYGATHRIX AYGULA (Linn.); (*S.*) *albocinereus,* comprising two or more species, the *albocinereus* Desmarest, being undeterminable; D. (*S.*) *ferrugineus* Schleg., = PYGATHRIX MELANOLOPHA (Raffles); E. (*S.*) FEMORALIS; (*S.*) CHRYSOMELAS; (*S.*) *neglectus* Schleg., = PYGATHRIX FEMORALIS (Horsf.); F. (*S.*) OBSCURUS. The second section has two divisions A and B. The first, A, contains those species with hair on top of head directed backward and lengthened possibly at the occiput, and the dominant color of the pelage tending to black or grayish brown, with these species: (*S.*) JOHNI; (*S.*) CEPHALOLOPTERUS; (*S.*) *kelaarti* Schleg., = PYGATHRIX CEPHALOLOPTERA (Zimmer.); (*S.*) *senex* Erxl., undeterminable. The second, B, has species with long, erect hairs on forehead, and lengthened hairs on occiput, but not forming a crest; thumb shorter; pelage of young russet red, changing early to a very different color, the adults being uniform black, or black with hairs tipped with whitish gray, or a uniform russet red, as follows: (*S.*) *maurus* F. Cuv., = PYGATHRIX AURATA (Geoff.); (*S.*) *pyrrhus* Horsf., = PYGATHRIX AURATA (Geoff.); (*S.*) *pruinosus* Desm., = PYGATHRIX CRISTATA (Raffles); (*S.*) ENTELLUS; (*S.*) SCHISTACEUS; and (*S.*) *dussumieri* (I. Geoff.), = PYGATHRIX HYPOLEUCA (Blyth); (*S.*) GERMAINI is mentioned, but is not in the Museum.

1878. *J. Anderson, Anatomical and Zoological Researches, and Zoological Results of the Yunnan Expedition.*
Pygathrix holotophrea described as *Semnopithecus holotophreus* from an unknown locality, and specimen apparently not preserved; probably = Pygathrix barbei; and *Semnopithecus routledgi* also from an unknown locality, and no example preserved, possibly = Pygathrix cristata.

1879. *Peters, in Monatsberichte Königlische Akademie der Wissenschaften, Berlin.*
Pygathrix potenziani redescribed as *Semnopithecus chrysogaster.*

1889. *O. Thomas, in Proceedings of the Zoological Society of London.*
Pygathrix hosei first described as *Semnopithecus hosei.*

1892. *O. Thomas, in Annals and Magazine of Natural History.*
Pygathrix cruciger first described as *Semnopithecus cruciger.*

1892. *O. Thomas, in Proceedings of the Zoological Society of London.*
Pygathrix everetti first described as *Semnopithecus everetti.*

1892. *Collett, in Proceedings of the Zoological Society of London.*
Pygathrix thomasi first described as *Semnopithecus thomasi.*

1893. *O. Thomas, in Annals and Magazine of Natural History.*
Pygathrix sabana first described as *Semnopithecus sabanus.*

1894. *Thomas and Hartert, in Novitates Zoologicæ.*
Pygathrix natunæ first described as *Semnopithecus natunæ.*

1898. *Pousargues, in Bulletin du Muséum d'Histoire Naturelle, Paris.*
Pygathrix françoisi first described as *Semnopithecus françoisæ.*

1903. *G. S. Miller, Jr., in Smithsonian Miscellaneous Collections.*
Pygathrix batuana first described as *Presbytis batuana.*

1906. *G. S. Miller, Jr., in Proceedings of the United States National Museum.*
Pygathrix carimatæ first described as *Presbytis carimatæ;* and *Pygathrix cana* first described as *Presbytis cana.*

1906. *D. G. Elliot, in Proceedings of the Biological Society of Washington.*
Pygathrix fusco-murina first described as *Presbytis fuscomurina.*

1908. *M. W. Lyon, in Proceedings of the United States National Museum.*

Pygathrix percura first described as *Presbytis percura;* and Pygathrix catimana first described as *Presbytis catimana.*

1909. *D. G. Elliot, in Annals and Magazine of Natural History.*
Of the genus Pygathrix, under the genus *Presbytis,* the following species were here first described: *P.* nudifrons; *P.* melamera; *P.* nubigena; *P.* dilecta; *P.* margarita; *P.* crepuscula; *P. c. wroughtoni;* and *P.* lania.

1909. *O. Thomas and R. C. Wroughton, in Annals and Magazine of Natural History.*
Pygathrix cristata pullata first described as *Presbytis cristata pullata;* and *Pygathrix obscura carbo* was first described as *Presbytis obscura carbo.*

1909. *Dollman, Annals and Magazine of Natural History.*
P. rubicunda redescribed as *Presbytis ignita.*

1910. *D. G. Elliot, in Proceedings of the United States National Museum.*
Of the genus Pygathrix, the following species were first described under *Presbytis:* P. flavicauda; P. sanctorem; and P. ultima.

1910. *O. Thomas, in Proceedings of the Zoological Society of London.*
Pygathrix robinsoni first described as *Presbytis robinsoni.*

1911. *M. W. Lyon, in Proceedings of the United States National Museum.*
Pygathrix rubicunda redescribed as *Pygathrix r. rubida.*

1911. *Robinson and Kloss, in Journal of the Federated Malay States Museums.*
Pygathrix femoralis redescribed as *Presbytis neglecta keatii.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The members of the genus Pygathrix have a wide distribution and are found throughout the peninsula of India, in Ceylon, Thibet, and the countries on the east of the Bay of Bengal, from Assam throughout the Malay Peninsula, Cochin China, Annam, Siam, and various islands in the Eastern Archipelago, including the great islands of Borneo, Sumatra and Java, but not, so far as known, in the Philippines.

Beginning in the farthest north we find in the Chumba Pass, Thibet, P. lania, but its range to the north is not known. From Cashmere to Bhutan P. schistacea is found, while P. entellus the allied form, ranges from the southern banks of the Ganges and Jumna Rivers, through parts of the Gangetic Provinces, the Dukhun and the Carnatic down to the Malabar coast according to Hutton, while Blanford gives its distribution as South-western Bengal, Orissa, Central Provinces, Bombay, Guzerat, Southern Rajputana and part of the Northwest Provinces to Kattiwar and probably to Cutch, but not to Sind or the Punjaub. Although well known for so long a period the range of this species is still somewhat in doubt, on account of its having been introduced into various places, such as "Colonies found near certain Hindu shrines, as Muttra in the North-west Provinces and Kishnagurh in Bengal," and probably in other localities. From Nellore in the north to the Coromandel Coast and the Carnatic, the Wynaad, and also on the eastern slopes of the Nilgiri Hills up to 6,000 feet, and from Northern Ceylon to the Kandyan Hills in the south P. PRIAMUS is met with. On the western side of the peninsula, on the Malabar coast to Cape Comorin, P. HYPOLEUCA has been observed up to 1,200 feet. On the higher parts of the Western Ghats, from the Wynaad to Cape Comorin, and on the Nilgiri, Palnai, and Animali Hills, in all of which it is abundant, P. JOHNI is found, but not below 2,500 feet. Besides the species already mentioned Ceylon also contains P. CEPHALOLOPTERA generally distributed, but not above 1,200 feet; P. MONTICOLA in the mountains of the Kandyan Provinces, and P. URSINA in the mountains of southern parts near Nuwarra Eliya. Passing now to the east of the Bay of Bengal, P. PILEATA is met with in Assam and hills to the south of the valley, Sylhet, Tipperah, Chittagong, northern Arakan, and part of Upper Burma, but is not known to go into Tenasserim. In the Bassein district of Pegu, and in Arakan, and south to around Moulmein, Tenasserim, P. PHAYREI is met with; and in the Tipperah Hills south to Mount Muleyit, in Tenasserim, and in Upper Burma on the Irawady above Mandalay, and in the Kakhyen Hills P. BARBEI ranges. At Cadu Ciaung, Bhamo, North Burma, P. MELAMERA was taken, its range unknown. In Tenasserim at Bankasun P. FEMORALIS has its most northern range, going south through the Malay Peninsula, and is also found on Mount Ophir in Sumatra. On Mount Muleyit, at 5,000 feet elevation extending eastward into Siam P. OBSCURUS has been observed, and also on Mount Muleyit P. CREPUSCULA was taken. In Siam at Pachebon *P. c. wroughtoni* was procured, and in the same kingdom, range unknown, P. SIAMENSIS is found, and also P. GERMAINI, the latter going to Cochin China. At Lang Bian, Annam, P. MARGARITA was discovered; and at Trong, Lower Siam, P. FLAVICAUDA was procured. On the boundary between Tonkin and China P. FRANÇOISI was taken. In northern Cochin China and on the Island of Hainan P. NEMÆUS was procured, and at Saigon, and near the mouth of the Mékong River, P. NIGRIPES was obtained. In the Malay Peninsula at Trang, P. ROBINSONI was procured, and at Kéka P. NUBIGENA was found, while at Selangore in the south, P. DILECTA was obtained. In the Mergui Archipelago off the west coast of the Malay Peninsula, on the island of St. Matthew, P. SANCTORUM was discovered. In the Straits of Malacca, on the islands of Langkawi and Turutau, P. CARBO was obtained. In the Rhio Archipelago at Telok Pemudong, Batsu Island, *P. c. pullata,* and on Pulo Bitang. P. RHIONIS were discovered, and on Kundur, P. CANA was found. Sumatra has several species of this genus. In the Langhat district, north eastern part, is P. THOMASI; P. CRISTATA at Padung and Indrapore, and also on the west coast at Bay of Lampongs; on the east coast at Kompei, is P. PERCURA; and on the Katiman River is P. CATIMANA; while in the south near Telok Betong is P. FUSCOMURINA. In the Indrapore district in the northwest, to Bencoulen in the southwest, we have P. MELANOLOPHA and P. NOBILIS, exact locality unknown; and lastly on Mt. Ophir P. SUMATRANA. On South Pagee Island of the Metawee Group, P. POTENZIANI is found, P. CRISTATA is said by Schlegel, (p. 31), to be found on Banka, but I have no knowledge of its presence there. In the great Island of Java two species are found, P. AYGULA in the mountains of the western portion, and P. AURATA in the south and east, at Tjelatjap and Sourabaya, or their vicinities. In the Karimata Islands at Telok Edar, P. CARIMATA is found. On Natuna Island, of the group of that name, P. NATUNÆ was discovered. Borneo possesses a number of species of PYGATHRIX, and commencing in the northwest we have P. NUDIFRONS at Bepalong, Sarawak; and on the Miri River, Sarawak, is P. CRUCIGER, which is also found on the borders of the Butong Lupar, and Bakam rivers, At Miah, also on the northwest coast, in the Bairam district, is P. HOSEI and P. CHRYSOMELAS; and at Paitan, P. SABANA is found. On Mount Dulit, at an elevation of 3,000 feet P. ULTIMA is met with; and on Mt. Kina Balu at 3,500 feet elevation P. EVERETTI dwells. From eastern Borneo, east of the Banjer River we have P. FRONTATA. Lastly from Mt. Malu at a height of 1,000 feet to east of the Banjer River, and in western Borneo to south of the Kapuas River, and in south western Borneo P. RUBICUNDA ranges. The habitat of one described form, P. HOLOTOPHREA, is unknown, nor is there any specimen extant so far as I am aware.

KEY TO THE SPECIES AND SUBSPECIES.

- A. Head crested.
  - *a.* General color ochraceous or reddish.
    - *a.'* Occipital crest black or blackish.
      - *a.''* Limbs ochraceous .... *P. melanolopha.*
      - *b.''* Limbs bright fox red .... *P. nobilis.*
    - *b.'* Occipital crest chocolate red .... *P. rubicunda.*
    - *c.'* Occipital crest tawny .... *P. carimatæ.*
  - *b.* General color brown, or slaty gray.
    - *a.'* Upper parts Prout's brown .... *P. frontata.*
    - *b.'* Upper parts slaty gray .... *P. nudifrons.*
  - *c.* General color above black or brownish black; no white on head.
    - *a.'* Crest ochraceous rufous .... *P. cruciger.*
    - *b.'* Crest black.
      - *a.''* Upper parts of body black; tail white beneath .... *P. chrysomelas.*
      - *b.''* Upper parts of body brownish black; tail white at base only.
        - *a.'''* Size large; mandible broad, rather heavy .... *P. sumatrana.*
        - *b.'''* Size small; mandible light and slender .... *P. batuana.*
    - *c.'* Crest brown.
      - *a.''* Tail all black .... *P. percura.*
      - *b.''* Tail white at base beneath .... *P. femoralis.*
  - *d.* General color reddish brown or dusky.
    - *a.'* Limbs and tail blackish brown .... *P. melamera.*
    - *b.'* Limbs and tail grayish .... *P. barbei.*
  - *e.* General color dusky gray .... *P. holotephrea.*
  - *f.* General color broccoli brown .... *P. phayrei.*
  - *g.* General color black tinged with brown, tail cream color .... *P. flavicauda.*
  - *h.* General color creamy white with black hairs mixed .... *P. robinsoni.*
  - *i.* General color dark, or pale brown.
    - *a.'* Thighs grayish, not white.
      - *a.''* Nuchal patch conspicuous.
        - *a.'''* Upper parts sooty black .... *P. obscura.*
        - *b.'''* Upper parts black.

- *a.*⁴ Nuchal patch pale drab gray tail dark gray ....*P. carbo.*
- *b.*⁴ Nuchal patch creamy white, tail buffy gray ....*P. sanctorum.*
- *b.*″ No nuchal patch ....*P. nubigena.*
- *b.*′ Thighs white extending to body.
  - *a.*″ Legs below knees grayish white ....*P. dilecta.*
  - *b.*″ Legs below knees black.
    - *a.*³ Forearms black ....*P. natunæ.*
    - *b.*³ Forearms not black.
      - *a.*⁴ Nuchal crest broccoli brown.
        - *a.*⁵ No white on chest ....*P. rhionis.*
        - *b.*⁵ With white on chest ....*P. cana.*
      - *b.*⁴ Nuchal crest grayish brown. .*P. siamensis.*
- *c.*′ Thighs white not extending to body ....*P. catemana.*

j. General color gray.
- *a.*′ Hands and feet white.
  - *a.*″ No white on head ....*P. aygula.*
  - *b.*″ With white on head ....*P. fuscomurina.*
- *b.*′ Hands and feet black.
  - *a.*″ No white on head ....*P. sabana.*
  - *b.*″ With white on head
    - *a.*³ Black stripe from eye to ear ......*P. everetti.*
    - *b.*³ No black stripe from eye to ear ......*P. hosei.*
  - *c.*″ White spot on forehead rest of head black ....*P. thomasi.*

k. General color black.
- *a.*′ Sides of head white.
  - *a.*″ Under parts of body rufous ......*P. potenziani.*
  - *b.*″ Under parts of body black ....*P. françoisi.*
- *b.*′ Sides of head yellowish white.
  - *a.*″ Inner side of thighs white .....*P. cephaloloptera.*
  - *b.*″ Inner side of thighs not white ....*P. c. monticola.*
- *c.*′ Sides of head yellow tinged with red.
  - *a.*″ Tail jet black ....*P. johni.*
  - *b.*″ Tail at base gray ....*P. ursina.*

l. Entire pelage black ....*P. aurata.*

m. General color speckled white and black.
- *a.*′ Tooth rows curved.
  - *a.*″ Much silver in the black ....*P. cristatus.*
  - *b.*″ Less silver in the black ....*P. c. pullata.*

b.' Tooth rows straight ....*P. ultima.*
n. General color bright bluish silvery gray ....*P. margarita.*
o. General color silvery gray and brown ....*P. germaini.*
p. General color drab gray.
a.' Forehead and sides of head black ....*P. crepuscula.*
b.' Forehead and sides of head wood brown. .*P. wroughtoni.*
q. General color various, hues pale.
a.' Hands and feet black.
a." General color buff yellow ....*P. entellus.*
b." General color mars brown ....*P. schistaceus.*
c." General color pale sepia grading into brownish gray; fur woolly ....*P. lania.*
d." General color yellowish gray ....*P. pileata.*
e." General color purplish brown ....*P. hypoleuca.*
b.' Hands and feet yellowish ....*P. priamus.*
B. Head not crested.
a. General color grizzled gray, rump and tail white.
a.' Whiskers white; legs from knees reddish brown ....*P. nemæus.*
b.' Whiskers black; legs from knees black ......*P. nigripes.*

Subgenus Lophopithecus.

I. $\frac{2-2}{2-2}$; C. $\frac{1-1}{1-1}$; P. $\frac{2-2}{2-2}$; M. $\frac{3-3}{3-3} = 32$.

Pelage mostly red or reddish; crest prominent, upright.

PYGATHRIX MELANOLOPHA (Raffles).

Simia melalophus (sic), Raffles, Trans. Linn. Soc. Lond., XIII, 1822, p. 244.

Semnopithecus melalophus (!) Desm., Mamm., 1822, Suppl., p. 533; *Id.* Dict. Scien. Nat., 1827, p. 160; Griffiths, Anim. Kingd., 1827, p. 10; Less., Man. Mamm., 1827, p. 40; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 10, 8me Leçon; Fisch., Syn. Mamm., 1829, p. 14; Bélang., Voy., Zool., 1834, p. 40; Müll., Tidjsch. Nat. Gesch., II, 1835, p. 327; Waterh., Cat. Mamm. Zool. Soc. Lond., 1838, p. 4; Müll. und Schleg., Verh., 1839-44, pp. 60, 66, tab. 12 bis, fig. 2; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 85; Less., Spec. Mamm., 1840, p. 61; Martin, Mammif. Anim., 1841, p. 470; Schinz, Syn.

Mamm., I, 1844, p. 36; I. Geoffroy, Cat. Primates, 1851, p. 16; Gerv., Hist. Mamm., I, 1854, p. 63; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 21; Dahlb., Stud. Zool. Fam. Reg. Anim., 1856, pp. 88, 90; Reichenb., Vollständ. Naturg. Affen, 1862, p. 93, fig. 225; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 43, (Part.); Anders., Zool. Exped. Yunnan, 1878, p. 34; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 53; Forbes, Handb. Primates, II, 1894, p. 136.

Semnopithecus flavimanus Less., Cent. Zool., 1830, p. 109, pl. XL; I. Geoff., Bélang., Voy., Zool., 1834, p. 39; Waterh., Cat. Mamm. Zool. Soc. Lond., 2nd ed., 1838, p. 4; Less., Spec. Mamm., 1840, p. 60; I. Geoff., Compt. Rend., XV, 1842, p. 719; *Id.* Archiv. Mus. Hist. Nat. Paris, II, 1843, p. 543; Müll. und Schleg., Verhandl., 1839-44, pp. 61, 67; Schinz, Syn. Mamm., I, 1844, p. 37; I. Geoff., Cat. Primates, 1851, p. 16; Gerv., Hist. Nat. Mamm., 1854, p. 63; Dahlb., Stud. Zool. Fam. Regn. Anim. Nat., fasc. I, 1856, pp. 88, 90.

Semnopithecus sumatranus var. *aurata* Müll. und Schleg., Verhandl., 1839-44, pl. X bis, fig. 2, ♀.

Presbytis melalophus (!) Gray, Handb. Mamm., Brit. Mus., 1843, p. 2.

Presbytis flavimana Gray, Handb. Mamm. Brit. Mus., 1843, p. 2.

Semnopithecus (*Trachypithecus*) *melalophus* (!) Reichenb., Vollständ. Naturg. Affen, 1862, p. 92, pl. XVI, figs. 220, 221.

Semnopithecus (*Trachypithecus*) *flavimanus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 93, pl. XVI, fig. 225.

Semnopithecus ferrugineus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 42.

BLACK-CRESTED LANGUR.

Type locality. Bencoulen, Island of Sumatra.

Geogr. Distr. Padang and the Idrapore district, north west Sumatra (Schlegel); Bencoulen, (Raffles), Island of Sumatra.

Genl. Char. Upright crest, compressed, running along the center of the head, and longest on the occiput; body slender; hair long, soft; tail long.

Color. Long black hairs along the forehead, golden cream yellow; brownish black streak from eye encircling the crown; crest golden yellow becoming brownish black on the hind part; back of head and neck grayish yellow, the whiskers of the same color mingling with the hairs of hind neck below and behind the ears; entire upper parts of body and arms, general color ochraceous, the hairs being ochraceous buff tipped with brown, this giving a darkened hue to the general effect; outer surface of legs bright ochraceous rufous, with a dark line of the same color from knee on to thigh; entire under parts and inner side of limbs yellowish white; hands and feet ochraceous rufous; tail above like the back, but becoming a clearer ochraceous rufous towards the tip, beneath paler for basal half, remainder like upper parts.

Measurements. Total length, 1,110; tail, 650; foot, 160, (skin). Skull: total length, 99.2; occipito-nasal length, 80.4; intertemporal width, 40; Hensel, 31.6; zygomatic width, 74.8; breadth of braincase, 55; length of upper molar series, 26.8; length of mandible, 73.5; length of lower molar series, 31.7.

Female. Skull in Paris Museum. Total length, 99.7; occipito-nasal length, 87.8; intertemporal width, 46; breadth of braincase, 57.2; Hensel, 62.8; zygomatic width, 71.6; median length of nasals, 10.6; length of upper molar series, 25.7; length of mandible, 67.2; length of lower molar series, 25.5.

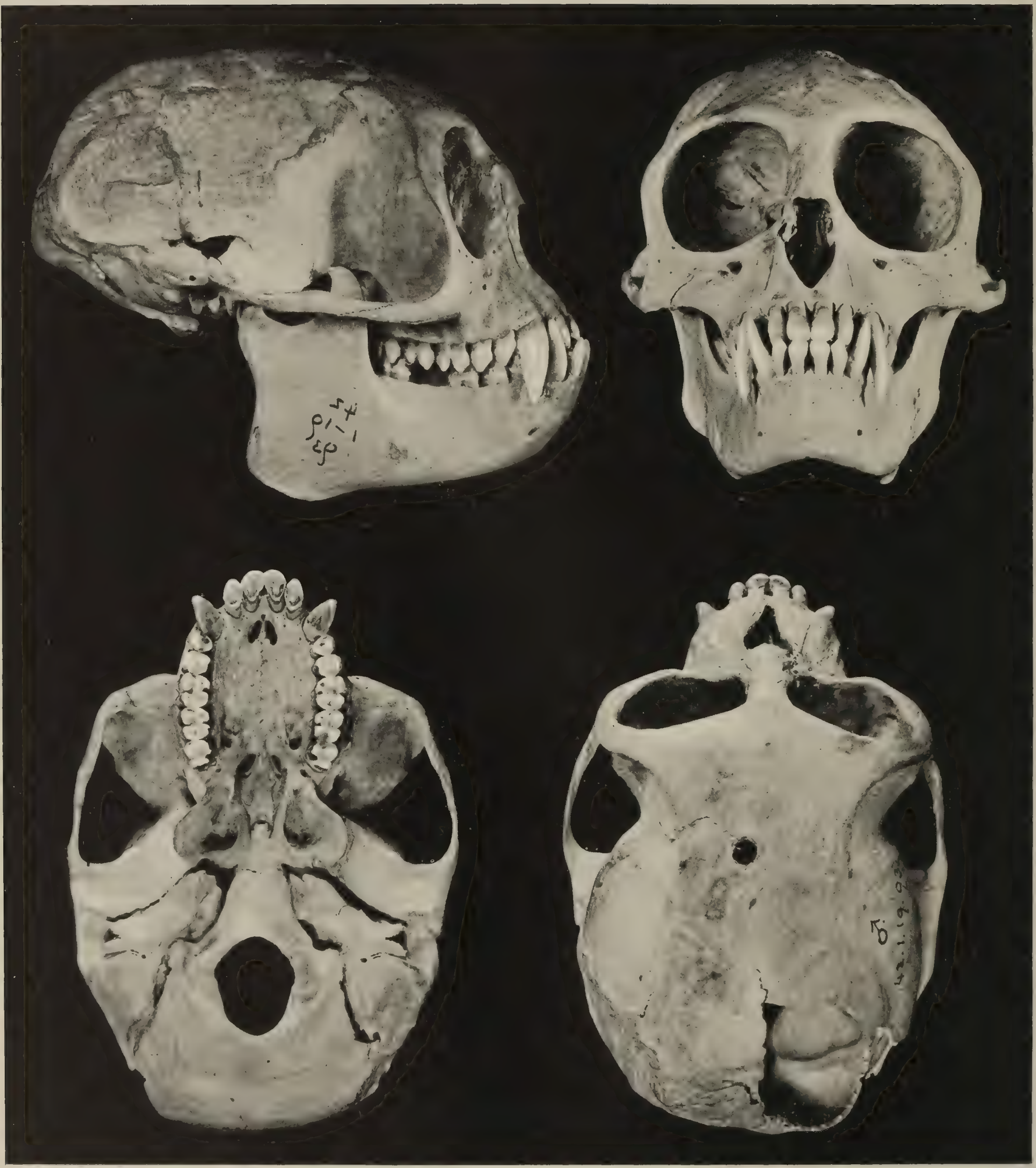
The type of *S. flavimanus* Geoff., is no longer in the Paris Museum, but there is an example labelled with that name, presented by M. Diard but without date. It is in very good condition although faded somewhat in the lighter colors, and cannot be separated from P. MELANOLOPHA.

Semnopithecus ferrugineus Schleg., (l. c.) is represented in the Leyden Museum, all the examples immature, and among them the one figured in Müller and Schlegel's work (l. c.). I can see no reason to separate these from P. MELANOLOPHA, as they seem to grade gradually into the pelage of the adult of that species, and slightly older specimens recognized as P. MELANOLOPHA differ from *S. ferrugineus* Schleg., only in the crest and back having turned a little darker, progressing to the brownish back of P. MELANOLOPHA.

PYGATHRIX NOBILIS (Gray).

Semnopithecus nobilis Gray, Ann. Mag. Nat. Hist., X, 1842, 1st Ser., p. 256; *Id.* Handb. Mamm. Brit. Mus., 1843, p. 3; I. Geoff., Archiv. Mus. Hist. Nat. Paris, II, 1843, p. 545; Blyth, Jour. Asiat. Soc. Beng., XIII, 1844, p. 476; XLIV, 1875, p. 11, ext. no.; Gerv., Hist. Nat. Mamm., 1854, p. 68; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 17.

Semnopithecus (*Trachypithecus*) *nobilis* Reichenb., Naturg. Affen, 1862, p. 92, not figured.



PYGATHRIX RUBICUNDA.

SIDE VIEW REVERSED.

No. 42.1.19.93. Brit. Mus. Coll. 4/5 Nat. Size.

Type locality. Sumatra. Type in British Museum.

Genl. Char. General color above and below, much deeper and richer than P. MELANOLOPHA; under parts not yellow.

Color. Crest on hinder part of head brownish black in front, but remainder, together with hind neck, yellowish red; long brownish black stiff hairs shooting outwards from a narrow line on forehead over eyes, continuing backwards from corner of eyes over temples to back of head, forming a narrow streak; top and sides of head, and outer side of limbs bright fox red; upper parts of body dark brownish red, close to cinnamon rufous; flanks lighter red; throat and sides of neck buff, with a red tinge varying in depth among individuals; inner side of limbs and lower abdomen reddish buff; chest and upper parts of abdomen reddish; tail bay color throughout. Ex type in British Museum.

Measurements. Total length, 1,530; tail, 850; foot, 180. Skull: total length, 98.3; occipito-nasal length, 86.5; intertemporal width, 47.8; breadth of braincase, 62.8; Hensel, 62.9; zygomatic width, 78; median length of nasals, 91; length of upper canines, 19; length of upper molar series, 26; length of mandible, 68.1; length of lower molar series, 35. Ex type British Museum?

This is a larger and differently colored monkey from S. MELANOLOPHUS Raffles, and is recognizable also by the differences between the skulls, that of the present species not only being larger in accordance with the greater size of the animal, but has the upper tooth rows more curved, a broader basioccipital and presphenoid, a more largely developed bullæ, and a broader mastoid region. Canines much longer. The crest of P. NOBILIS is longer and of quite a different color.

Anderson in his Zoology of Yunnan says that an examination of the type of P. NOBILIS did not reveal any differences between it and P. MELANOLOPHUS. I wonder, however, that he arrived at such a conclusion, and it must be supposed that he inadvertently compared two specimens of P. NOBILIS together, but if this was not the case, it is difficult to understand how he could reconcile the difference in size and coloration existing between the two forms, to cause him to consider them as belonging to one species, and this also without considering the cranial characters.

PYGATHRIX RUBICUNDA (Müller).

Semnopithecus rubicundus Müll., Tijdsch. Natur. Geschied., V, 1838, p. 137, pl.; Martin, Mammif. Anim., 1841, p. 473; Müll. und Schleg., Verhandl., 1839-44, pp. 61, 69, Tab. 9, figs. 1, 2, 3, 4, Tab. II, fig. 1; Schinz, Syn. Mamm., I, 1844, p. 36; I. Geoff., Cat. Primates, 1851, p. 16; Gerv., Hist. Nat. Mamm., 1854, p. 63, fig.; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 22; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 17; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 36; Anders., Zool. Exped. Yunnan, 1878, p. 33; Hose, Mamm. Borneo, 1893, p. 9; Forbes, Handb. Primates, II, 1894, p. 128.

Semnopithecus (*Trachypithecus*) *rubicundus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 91, pl. XV, figs. 213-215.

Presbytis ignita Dollman, Ann. Mag. Nat. Hist., LV, 1909, 8th Ser., p. 204.

Pygathrix rubicunda rubicunda Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 138.

Pygathrix rubicunda rubida Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 139.

MAROON LANGUR.

Type locality. East of Banjer River, Southeast Borneo. Type? in Leyden Museum.

Geogr. Distr. Northern to Southeastern Borneo, to 1,000 feet elevation on Mount Mulu.

Genl. Char. Hair radiating on the forehead; crest compressed; mandible light, slender.

Color. Crest long, erect from crown and falling over to each side from the occiput, and with the entire upper parts uniform chocolate red; outer side of limbs chestnut; under parts of body and inner side of limbs, paler, yellowish red; hands and feet black; tail chestnut.

Measurements. Total length, 1,260; tail, 730; foot, 175. Skull: total length, 96; occipito-nasal length, 85.7; intertemporal width, 41.7; Hensel, 56.6; zygomatic width, 68.8; breadth of braincase, 59.1; median length of nasals, 95; palatal length, 25.1; length of upper molar series, 23.9.

The presumed type of (*S.*) RUBICUNDA, and one from which the figure in Müller and Schlegel's work was taken, is in the Leyden Museum. It is uniformly red, except on the inner side of limbs which is paler, with a yellowish tinge. The hands and feet are like body but darker, caused by the presence of black hairs, as if these members were turning to that color.

P. ignitus Dollman came from Mt. Mulu, north Borneo and the first impression it makes upon the observer is that it is specifically distinct from P. RUBICUNDA; but after examining a series of this red monkey from northwest Borneo, some of them from Mt. Mulu, the type locality of *ignita,* with numerous examples in the United States National Museum from southeast Borneo, they were found to be identical in color of coat and in character of skull. Of course there was individual variation, but both the dark hue, characteristic of typical RUBICUNDA and light red answering to typical *ignitus* were present, and all the skulls had the light mandible and slender ascending ramus seen in RUBICUNDA, but not in the island form P. CARIMATÆ. The variation observable among the specimens in the shades and tints of red in their pelage was independent of age or locality. I have therefore placed *P. ignita* as a synonym of the present species.

Since I examined Dr. Abbott's material, in the United States National Museum, of *P. rubicunda,* Dr. Lyon (l. c.) has described a specimen from Batu Jurong, southwestern Borneo, as distinct under the name of *Pygathrix rubicunda rubida.* The specimen from this part of the island should be compared with those from other parts of Borneo, not with *P. carimatæ* which is distinct. Between *P. r. rubida* and *P. r. ignita* (locality of last named specimen not mentioned, but supposedly Mt. Mulu), the only differences observable in the table of comparisons on page 139, are "Fossa between pterygoids relatively deep, and the outer edge of posterior zygomatic root *as a rule* not separated from outer mastoid edge by a distinct space or groove, the two edges soon confluent" in *P. r. ignita;* per contra, we have, "Fossa between pterygoids relatively shallow, and outer edge of posterior zygomatic root separated from outer mastoid edge by a *more or less* well defined groove or distinct space" in *P. r. rubida.* The italics are mine. It would seem that one of these characters in the case of *P. r. ignita* is not *always* present, and that the same one in *P. r. rubida* varies among individuals. There is no difference mentioned in the color of the examples. When examining the same material which proved that *P. r. ignita* could not be separated from *P. rubicunda* both being found on Mt. Mulu, as mentioned above, I was unable to discover any character important enough to base a separation of these monkeys from various parts of Borneo, any one from another, and it does not seem that those advanced by Dr. Lyon are of sufficient importance to create even subspecific distinctness, and the name bestowed by him is therefore placed among the synonyms of the present species.

PYGATHRIX CARIMATÆ (Miller).

Presbytis carimatæ Miller, Proc. U. S. Nat. Mus., XXXI, 1906, p. 65; Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 139.

Type locality. Telok Edar, Karimata Islands. Type in United States National Museum.

Color. Head, occipital crest and long hairs on neck and arms to elbows, tawny, paler on crest and nape; upper parts, forearms and legs red, a color most difficult to describe, but similar to red mahogany; hands and feet chestnut; tail like body; face slaty; palms and soles dark brown; callosities dark brown. Ex type United States National Museum.

Measurements. Total length, 1,240; tail, 710; foot, 169. Skull: total length, 94.7; occipito-nasal length, 84; Hensel, 64.8; zygomatic width, 72.1; intertemporal width, 43.7; palatal length, 28.5; median length of nasals, 70; length of upper molar series, 24.9; length of mandible, 69.5; length of lower molar series, 34.2. Ex type United States National Museum.

The type example is that of an adult female. Seven specimens in all were procured, all females save one.

This species differs from the Bornean P. RUBICUNDA, in having the nape pale red like the crest, and plainly contrasted with the dark back. The mandible is also much heavier and the ascending ramus broader and shorter.

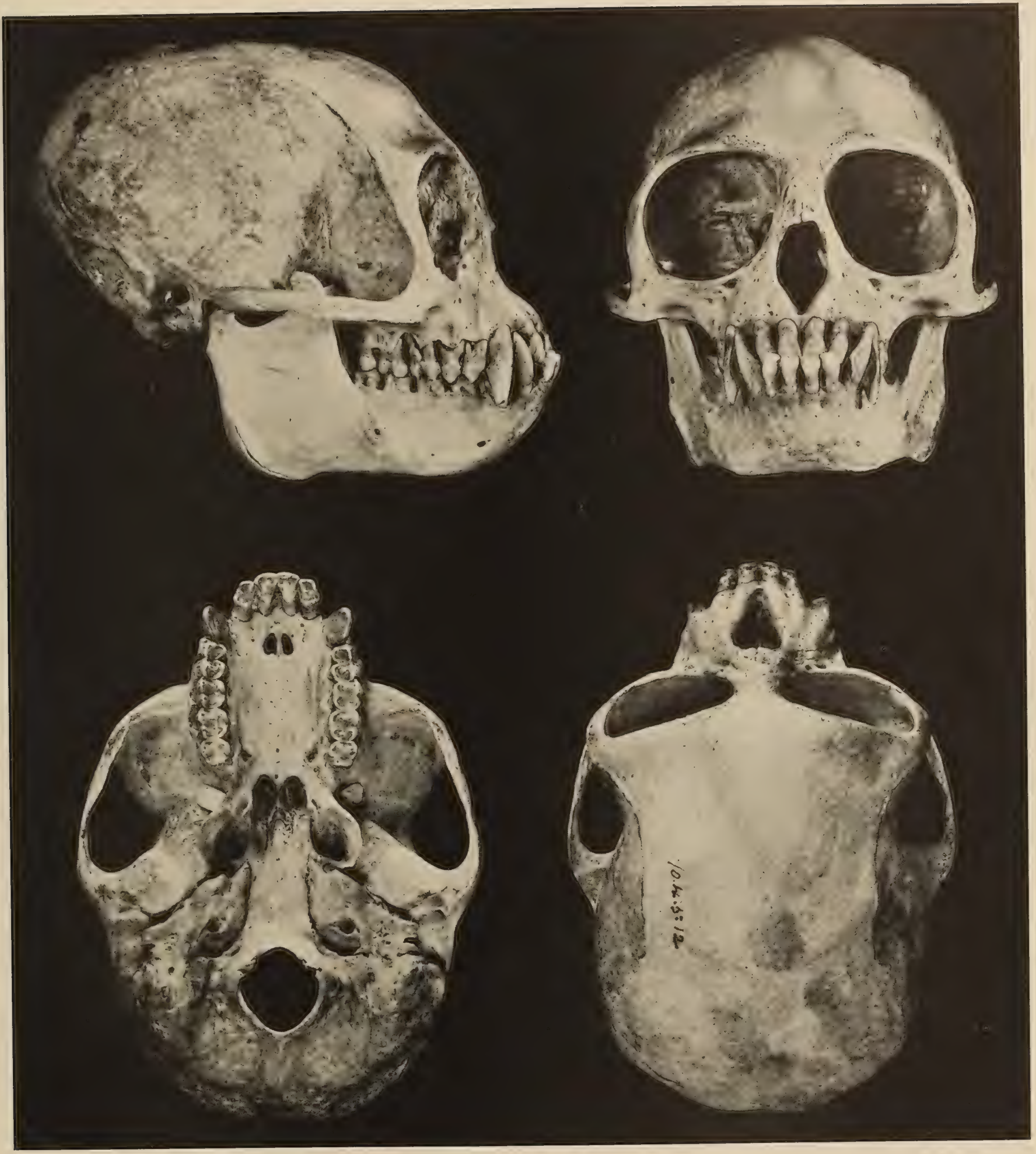
Subgenus Corypithecus.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{2-2}{2-2};\quad \text{M. } \frac{3-3}{3-3} = 32.$$

Pelage dark, or silvery, sometimes black, and forehead occasionally naked; crest peaked, in some cases dependent.

PYGATHRIX FRONTATA (Müller).

Semnopithecus frontatus Müll., Tijdsch. Natur. Geschied, V, 1838, p. 136, pls. I, II; Müll. und Schleg., Verhandl. Geschied., 1839-44, pp. 62, 78, Tab. VIII, figs. 1, 2, 3, 4; Martin, Mammif. Anim., 1841, p. 475; Schinz, Syn. Mamm., I, 1844, p. 38; I. Geoff., Cat. Primates, 1851, p. 15; Gerv., Hist. Nat. Mamm., I, 1854, p. 63; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 24; Dahlb., Stud. Fam. Regn. Anim., 1856, pp. 88, 90; Reichenb., Vollständ. Naturg. Affen, 1862, p. 90, figs. 211,



PYGATHRIX FRONTATA.

No. 10.4.5.12. Brit. Mus. Coll. ⅘ Nat. Size.

212; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 34; Anders., Zool. Exped. Yunnan, 1878, p. 39; Hose, Mamm. Borneo, 1893, p. 12.

Semnopithecus (*Trachypithecus*) *frontatus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 90, pl. XV, figs. 211, 212.

Pygathrix frontata Lyon, U. S. Nat. Mus., XL, 1911, p. 140.

WHITE-FRONTED LANGUR.

Type locality. East of River Banjer, southeast Borneo. Type in Leyden Museum.

Geogr. Distr. Southeastern Borneo.

Genl. Char. Bald triangular wrinkled area between eyebrows; median crest erect, overhanging forehead; hair on cheeks long, dependent; forehead narrow, high; facial portion of skull short; orbits broad.

Color. Triangular spot on head white; line between eyes and nose, and line on margin of upper lip and lower lip flesh color; rest of face and the nose black; lips covered with short yellow hairs; hairs on head diverge on three sides from the bare spot; long black hairs from forehead over and behind eyes, extend backward over temples and cheeks in a lengthened point to behind ear; crest rises from behind the bare spot, and extends over center of head to nape, of equal length throughout, and with the hairs on top of head, is blackish brown; entire upper parts of body, and outer side of arms to shoulders Prout's brown; forearms above from wrist black, grading to dark brown above elbows; hands, legs below knees, and feet, black; thighs, blackish brown; lower part of cheeks, throat, inner side of limbs, and entire under parts of body pale reddish, inclining to yellowish on cheeks, breast and beneath arms; tail above black at base, rest greenish olive, beneath brownish black at root, remainder greenish olive like the upper part. Ex type Leyden Museum.

Measurements. Total length, 1,200; tail, 760; foot, 155, (skin). Skull: total length, 93.5; occipito-nasal length, 91.6; zygomatic width, 72.4; length of upper molar series, 25; length of mandible, 64.6; length of lower molar series, 28.8. Ex type Leyden Museum.

This is a brown monkey, with partially black limbs and wholly black hands and feet. It differs in many ways, besides coloration, from the next species from northwest Borneo. The skull has a high arched narrow forehead, with the superior outline circular; the bare space on forehead is triangular in shape and white, (it is square and yellow in the northern species, possibly in life it is orange yellow). Besides the different color of the body, the tail of the northern species in no way resembles that of P. FRONTATUS, being a silvery gray with a brown tinge.

PYGATHRIX NUDIFRONS (Elliot).

Presbytis nudifrons Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 266.

Type locality. Byalong, Sarawak. Northwest Borneo. Type in British Museum.

Genl. Char. Bare spot on forehead like in P. FRONTATA, divided in the middle by a line of short black hairs running from forehead to end of nose, these hairs growing towards each other from each side, and forming a low ridge where they meet; crest equally long throughout its length from forehead to nape, hairs turned forward; no brown coloring on any part of the pelage. Skull: without the high forehead of P. FRONTATA, this being only slightly raised, and the superior outline descending rapidly to occiput.

Color. Forehead, orange yellow, face flesh color; eyelids black; line of short hairs down line of nose from forehead, black; hairs on upper lip and cheeks black, those from the latter very long, and extending to a point along the neck; hair from corner of the eye, and hairs from forehead, black, very long, directed backward along side of head joining together on temples; hairs on center of head to nape, long, erect, directed forward forming a crest, sepia in front grading to slate gray on hind neck; entire upper part and sides of body slaty gray; outer side of arms to below elbows, and inner side of legs to near ankles feet, black; throat white; under parts of body brownish gray; inner side of arms to below elbows, and inner side of legs to near ankles grayish white, darkest on legs below knee; tail above and beneath black at base, remainder silvery gray with a brown tinge. Ex type British Museum.

Measurements. Total length, 1,170; tail, 645; foot, 160, (skin). Skull: total length, 98.5; occipito-nasal length, 87.7; intertemporal width, 48.1; Hensel, 58.9; zygomatic width, 71.8; width of braincase, 55.5; median length of nasals, 12; palatal length, 26.7; length of upper molar series, 25; length of upper canines, 16; length of mandible, 15.9; length of lower molar series, 29. Ex type British Museum.

This species is found on the opposite end of Borneo from the locality in which P. FRONTATA dwells. It has a squarish, not triangular bare spot on the forehead, divided by a line of short hairs. In color the two forms are entirely different, and there are examples of both sexes, and of adults and young named P. FRONTATA, in the Leyden Museum, some of which exhibit the coloration of this northwestern form.

PYGATHRIX CRUCIGER (Thomas).

Semnopithecus cruciger Thomas., Ann. Mag. Nat. Hist., X, 1892, p. 475; *Id.* Proc. Zool. Soc. Lond., 1893, p. 3; Hose, Mamm. Borneo, 1893, p. 15; Forbes, Handb. Primates, II, 1894, p. 121.

Presbytis femoralis cruciger Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 572.

CROSS-BEARING LANGUR.

Type locality. Miri River, Sarawak, Borneo (Hose). Type in British Museum.

Geogr. Distr. Miri River, Batang Lupar River, Bakam River, Borneo. (Hose).

Genl. Char. Hair of head long, forming an irregular crest, which is partly erect, and partly directed backward on the occiput; hairs on fore part and sides of head directed backwards, only those in center inclined to form a low, elevated, ridge-like crest.

Color. Top and sides of head, flanks, outer side of thighs, and legs below knees, deep ochraceous rufous; back of head and neck, upper part of body and shoulders, outer side of arms, stripe at knee, and another on inner side of leg, hands and feet jet black; this color on the back being gradually restricted in width as it goes towards the root of tail; lower part of cheek covered with long hairs directed backward, and reaching to the shoulders, golden yellow, as are also the hairs on throat and upper part of chest; inner side of arms reddish yellow, becoming less red towards the wrist; under parts from chest to lower abdomen ochraceous rufous, but paler than the flanks; lower abdomen and inner side of legs yellowish white; tail black, basal half beneath white, and tip inclined to rufous. The type of this species being a very young animal, not having obtained its fully colored dress, the description has been taken from an adult male procured on the Batang Lupar River, Sarawk, No. 93. 1. 30. 1. British Museum Collection.

Measurements. Total length, 1,240; tail, 740; foot, 160, (skin). Skull: total length, 92; occipito-nasal length, 81.3; intertemporal width, 45; Hensel, 60; zygomatic width, 68.1; breadth of braincase, 52.4; median length of nasals, 68; palatal length, 28.6; length of upper molar series, 22.7; length of mandible, 64.4; length of lower molar series, 27.3.

An adult female in the collection in the British Museum from the Bairam district, Sarawak, No. 0. 2. 2. 1, is peculiar in that the whole top of the head, flanks, and outer side of legs are reddish yellow, the top of head being mostly golden yellow, and the black line on front of leg is reduced to a small spot on the knee; while the under side of body is pale yellow. Whether this difference of color is due to age or individual variation it is difficult to determine.

"This is a most remarkable monkey," says Mr. Hose in his Mammals of Borneo, "which has lately been described by Mr. Thomas from a flat skin obtained by me some years ago at a place called Miri in the Baram district. I always considered the skin to be merely a striking variety of *Semnopithecus femoralis.* I shot the monkey on the sea coast along with a number of *Semnopithecus femoralis;* this was in the year 1887. I afterwards had the skin of a baby brought in, the markings of which were similar to that of the type, and it was obtained within a few miles of Miri, at a place called Bakam. But in September 1892, one of my Dyak hunters procured three fine adult specimens of this monkey on the Butang Lupar River in Southern Sarawak, and reported that they had seen several other specimens of like marking. In the three adult specimens, the black cross down the center of the back in some cases is broken, and the thighs are darker in some cases in one than in the other, but the striking red marking is kept up throughout each specimen."

PYGATHRIX CHRYSOMELAS (Müller).

Semnopithecus chrysomelas Müll., Tijdsch. Natur. Geschied., V, 1838, p. 138, pl.; Müll. und Schleg., Verhandl. Geschied., 1839-44, p. 61, tab. X, figs. 1, 2, tab. II, figs. 2, 3; Schinz, Mamm., I, 1844, p. 37; Jacquem. et Pucher., Voy. Pole Sud, III, 1853, p. 22; Wagn., Schreb., Säugth. Suppl., 1855, p. 23; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 46.

Semnopithecus (*Trachypithecus*) *chrysomelas* Reichenb., Vollständ. Naturg. Affen, 1862, p. 89, pl. XV, figs. 204-206.

Type locality. Pontianak, Borneo. Type in Leyden Museum.

Geogr. Distr. West coast of Borneo. Pontianak, (Schlegel); Baram District, (Hose); Balingean, Sarawak, (Robinson).

Color. Head crested like that of P. FRONTATA, but crest thicker and broader. Head, upper part of body, flanks, outer side of limbs, hands and feet glossy jet black; sides of neck blackish, some hairs ringed with white; inner side of limbs grayish white; dark brownish gray bar across breast between shoulders, followed by a broader band of gray; belly black; anal region and inner sides of arms, grayish white; tail above black to tip, beneath white, covering all the tail at base, but growing into a narrow stripe as it proceeds to the tip. Hairs on sides of head and neck long and directed upward towards ears, while those on top of head are parted from the crest, and are directed backward. Some males are all black on under side of body, probably the result of mature age. Ex type Leyden Museum.

Measurements. Total length, 1,260; tail, 800; foot, 160. (skin). Skull: total length, 89.1; occipito-nasal length, 78.8; intertemporal width, 46.6; Hensel, 47.6; zygomatic width, 66.1; breadth of braincase, 55.3; median length of nasals, 11.8; length of upper canines, 13.8; length of upper molar series, 21.8; length of mandible, 58.7; length of lower molar series, 25.7. Ex type Leyden Museum.

This species has been considered a synonym of P. FEMORALIS by many writers, but it is quite distinct, and can readily be recognized by its jet black pelage, and white beneath the tail. The shape of the crest, and growth of hair on top of the head, is quite different from P. FEMORALIS.

PYGATHRIX SUMATRANA (Müller and Schlegel).

Semnopithecus sumatranus Müll. und Schleg., Verhandl. Geschied., V, 1839-44, p. 73, tab. X bis, fig. 1, ♂; Schinz, Syn. Mamm., I, 1844, p. 39; Horsf., Cat. Mamm. E. Ind. Co. Mus., 1851, p. 15; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 23.

Semnopithecus (*Trachypithecus*) *sumatranus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 90, figs. 207, 208.

Type locality. Ophir Mountain? Sumatra.

Genl. Char. Upper parts not black; bar across chest not brown.

Color. Forehead black; crest, upper parts, flanks, and shoulders mummy brown darkest on dorsal region; outer side of arms, hands, legs and feet black; inner side of arms, narrowest on upper arms, gray, and on thighs yellowish white to knees, sometimes extending in slender line to ankles; below knees sooty; throat and chest blackish; abdomen yellowish white; tail beneath on basal half white, apical half, and all upper part jet black.

Measurements. Total length, 1,270; tail, 760. Skull: total length, 95.7; occipito-nasal length, 87; Hensel, 63.5; zygomatic width, 72.2; intertemporal width, 43; palatal length, 28.4; median length of nasals, 10; length of upper molar series, 24.9; length of mandible, 66.3; length of lower molar series, 27.1.

This form differs from P. CHRYSOMELAS, in having on the upper parts various tints of brown instead of black, according to the individual or sexual peculiarities of examples, and the throat and chest black not brown. Each kind represents a fairly distinct island species.

PYGATHRIX BATUANA (Miller).

Presbytis batuanus (!) Miller, Miscel. Coll. Smith. Instit., Wash., 1903, p. 670.

Type locality. Pulo Pinie, Batu Islands. Type in United States National Museum.

Genl. Char. Similar to P. SUMATRANA but smaller, tail shorter, and white at root beneath.

Color. General hue black, with crown and back washed with brownish; inner side of thighs, belly, median line of chest grayish white; tail above like body, beneath grayish white at root, grading into black at tip. Ex type United States National Museum.

Measurements. Total length, 1,150; tail, 665; foot, 163. Skull: greatest length, 912; occipito-nasal length, 80.8; zygomatic width, 70.5; Hensel, 58.5; intertemporal width, 40.7; palatal length, 28.6; median length of nasals, 11.7; length of upper molar series, 22.9; length of mandible, 62.5; length of lower molar series, 28.4. Ex type United States National Museum.

This species differs from its ally, P. SUMATRANA, in having a smaller skull, with shorter slighter canines, and quite a different mandible, this being very broad at the angle, and the ascending ramus is also very wide and with a deep lateral pit; the mandible of the Sumatran form being rather light and slender, and with a narrow ascending ramus, its anterior edge much curved outwardly and then backward, ending in a point. In body and limb measurements the two differ much.

PYGATHRIX PERCURA (Lyon).

Presbytis percura Lyon, Proc. U. S. Nat. Mus., XXXIV, 1908, p. 671.

Type locality. Kompei, eastern Sumatra. Type in United States National Museum.

Genl. Char. Exactly like P. SUMATRANA, but the tail unicolor, black above and below.

Measurements. Total length, 1,150; tail, 660; foot, 177. Skull: total length, 84.4; occipito-nasal length, 80.6; Hensel, 59.6; zygomatic width, 74.9; intertemporal width, 46; palatal length, 27.2; median length of nasals, .77; length of upper molar series, 23.3; length of mandible, 66.6; length of lower molar series, 28.4. Ex type United States National Museum.

PYGATHRIX FEMORALIS (Horsfield).

Simia maura Raffles, Trans. Linn. Soc. Lond., XIII, 1822, p. 247. (nec Schreb.).

Semnopithecus femoralis Horsf., Life Raffles, Append., 1830, p. 643; Waterh., Cat. Mamm. Zool. Soc. Lond., 1838, p. 5, 2nd ed.; Martin, Charlesw., Mag. Nat. Hist., New Ser., II, 1838, p. 436; Horsf., Cat. Mamm. E. Ind. Co. Mus., 1851, p. 10; I. Geoff., Cat. Primates, 1851, p. 15; Gerv., Hist. Nat. Mamm., I, 1854, p. 62; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 45; Anders., Zool. Exped. Yunnan, 1878, p. 30; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 52; Thos., Proc. Zool. Soc. Lond., 1886, p. 66; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 42; Hose, Mamm. Borneo, 1893, p. 13; Forbes, Handb. Primates, II, 1894, p. 126; Flower, Proc. Zool. Soc. Lond., 1900, p. 317.

Simia femoralis Cantor, Journ. Asiat. Soc. Beng., XV, 1846, p. 174.

Semnopithecus neglectus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 47.

Presbytis femoralis Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 572, Zool. Ser.

Presbytis neglecta keatii Robin. and Kloss, Journ. Fed. Malay States Mus., IV, 1911, No. 2, p. 174.

BANDED LANGUR.

Type locality. Tenasserim, Bankasun, (Thomas).

Geogr. Distr. Sumatra, Malay Peninsula north to Tenasserim; Borneo, (Hose).

Color. Head, limbs and tail black; arms grizzled with whitish, and the inner side of arms, and thighs to below knees grayish white; body above and on sides brownish black, with, in some specimens, a narrow white line from throat to abdomen; face, palms of the hands, and soles of feet black; under parts blackish, or sooty gray of varying intensity, in some examples nearly white.

Measurements. Total length, 1,225; tail, 725; foot, 140. Skull: total length, 98.2; occipito-nasal length, 76; intertemporal width, 47.1; Hensel, 57.8; zygomatic width, 68.9; width of braincase, 56; median length of nasals, .75; palatal length, 45.8; length of upper molar series, 23.7; length of mandible, 63.9; length of lower molar series, 28.

This species varies considerably in its coloring, dependent apparently upon age. Some specimens, and these are young, have the thighs grayish in hue, dorsal line a paler brown and the under parts nearly white especially on lower part of the belly, the older individuals being like the description given above. The tail, however, is never whitish at the base beneath, and in this differs from P. CHRYSOMELAS, which always has this part of the tail white. In some specimens there is a white line from throat to posterior part of abdomen.

Schlegel has separated this form with white line beneath as *Semnopithecus neglectus,* and says it is found only at Singapore. Among the specimens of P. FEMORALIS in the British Museum there are three with this mark, one from Johore, collected by Capt. S. S. Flower, the white line rather indistinct; one from Singapore collected by Wallace, and one from Tenasserim collected by Davison, the line very distinct in both. As, however, other Tenasserim examples have not the white line nor any trace of it whatever, unless it can be shown, that somewhere in Tenasserim there is a point beyond which, to the north or south, neither style passes, it would be wiser to consider this white mark rather an individual peculiarity, than a specific character. It certainly is not confined to individuals from Singapore, as was supposed by Schlegel, nor even to the southern part of the Malay Peninsula. Hose (l. c.) mentions the white line, "from the chest, in the adult, to the hinder portion of the abdomen" seen in specimens taken in Borneo, so it would seem that the character Schlegel mainly relied upon for his new species, is not confined to any locality.

Messrs. Robinson and Kloss have described (l. c.) a monkey of this genus from Trang, and the Larut Hills, Central Perak, Malay Peninsula, as *Presbytis neglecta keatii,* comparing it with *P. neglecta* (Schlegel), from which it differs in having a generally browner coloration, no white on the chest, and the white femoral line produced to the heel. As has been shown above, *P. neglecta* (Schlegel) cannot be separated from P. FEMORALIS, the character relied upon not being of any specific value but merely individualistic. The "generally browner color" of *P. n. keatii,* pertains to such examples of P. FEMORALIS as have not assumed the fully adult dress which is black, and the length of the abdominal white line varies among individuals, and cannot be relied upon as a specific character. P. FEMORALIS ranges in the Malay Peninsula north to Tenasserim, and it is not reasonable to believe that a distinct subspecific form is found within that species' limits, especially one so slightly differentiated as *P. n. keatii.* It is therefore considered as a young adult of the present species and the name placed among its synonyms.

Flower states, (l. c.) that "in September 1897, in the woods among the foothills of Gunong Puli, Johore, were many Lutongs of this species going about in flocks; they were shy and difficult to see except for a glimpse of a black form disappearing from one high tree to another."

Hose (l. c.) says that "this monkey is a low country species seldom to be found on the mountains, and then only ascends to about 1,000 feet. It is fond of living near the sea shore, and is generally found in numbers of from ten to thirty, sitting on the branches of tall trees in open spaces. Its Dyak name is 'Bigit,' that of the Kyans 'Pant.' "

PYGATHRIX MELAMERA (Elliot).

Presbytis melamera Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 267.

Type locality. Cadu Ciaung, Bhamo, north Burma. Type in British Museum.

Genl. Char. Resembling P. OBSCURA, but legs uniform sooty or blackish brown; hair long, thick, soft; head without crest.

Color. Long hair on forehead directed upward and forward, and with hairs on cheeks framing the face, black; hair on back of neck long, extending on to back, drab gray but not forming a conspicuous patch as in P. OBSCURA; dark hairs of head and back mingling with the light ones; top of head, sides of body and rump, shoulders, outer side of arms and legs to wrists and ankles, blackish brown; dorsal region more of a reddish brown, and paler than the flanks; whiskers long, blackish brown, the hairs with pale tips; chin white; under parts, inner side of arms, and inner side of thighs, sparsely covered with whitish hairs; inner side of legs below knees similar to upper part, but paler; tail blackish brown at base, grading into grayish brown, and with a white patch at base of tail beneath; face brownish, with space around eyes apparently red; cheeks, and sides of upper lips covered with black hairs; upper lip in the center beneath nose, covered with short white hairs. Ex type British Museum.

Measurements. Total length, 1,210; tail, 750; foot, 150, (skin). Skull: total length, 91.5; occipito-nasal length, 80.3; intertemporal width, 43.5; breadth of braincase, 56.8; Hensel, 60; zygomatic width, 66.3; palatal length, 27.1; median length of nasals, 10.8; length of upper molar series, 26.1; length of mandible, 64.4; length of lower molar series, 32.3. Ex type British Museum.

This monkey, while resembling somewhat P. OBSCURA, is easily distinguished by having the thighs colored like the upper part of the body, by the absence of a conspicuously defined nuchal patch, and by the dark tail. The hair is much less silky in texture, and more fitted for the less temperate climate of the northern region in which it dwells. The unique type was collected by L. Tea, and presented to the British Museum by the Marquis Doria.

PYGATHRIX BARBEI (Blyth).

Presbytis barbei Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 358; *Id.* Cat. Mamm. Asiat. Soc. Mus., 1863, p. 14; *Id.* Mamm. Burma, 1875, p. 11.

Presbytis cristata Blyth, Mamm. Burma, 1875, p. 9, (nec Raffles).

Semnopithecus barbei, Anders., Zool. Exped. Yunnan, 1878, p. 12; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 48; Blanf., Faun. Brit. India, Mamm., 1891, p. 39; Forbes, Handb. Primates, II, 1894, p. 102.

BARBE'S LANGUR.

Type locality. Province of Ye, Tenasserim. Type in Calcutta Museum.

Geogr. Distr. Tenasserim; Kachin Hills, Upper Burma, defile of the Irawady above Mandalay.

Color. Head and body uniform, dusky; hairs on hind neck and shoulders similar to back but with a gray tinge, and with numerous white hairs intermingled; arms and legs dusky, the legs below the knees inclined to grayish; hands and feet black; under part of body grayish; tail long and slender, dusky gray. Skull in specimen. Ex type Calcutta Museum.

This is a rather small slender Langur, of a black or dusky color, relieved with a grayish tinge on shoulders, elbows, and legs below knees. The type is in good preservation. Unfortunately the skull is in the specimen and no measurements can be given.

PYGATHRIX HOLOTEPHREA (Anderson).

Semnopithecus holotephreus Anders., Zool. Res. Exped. Yunnan, 1877, p. 27; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 50; Forbes, Handb. Primates, II, 1894, p. 124.

ANDERSON'S LANGUR.

Type locality. Unknown.

Measurements. "Total length 3 feet, 9.60 in."

"Uniform dark slaty gray, passing into black on the forearm and hands, and also on the feet. Upper parts, and inside of hind limbs and thighs pale yellowish gray. Head slightly crested over vertex, but only with a feeble tendency to lateral compression. Supra orbital hairs moderately long, and black; whiskers rather long, directed backwards and outwards, hiding the ears in front. Face bluish black; area around the eyes and the lips white.

"The nasal region of the skull is rather prominent, nearly straight and moderately broad, with the orifice narrow and rather long. Supra orbital ridges are well developed, and the orbits are nearly round and of moderate size. The premaxillaries form a slightly expanded suture with the nasals. The last mentioned bones are about half the lateral length of the premaxillaries. The palate has moderately broad margins very slightly posteriorly convergent."

The type of this form in the Calcutta Museum where it was supposed to be, although Anderson gives no information on this point, was not found. No locality was given by the describer for his specimen, nor beyond the description does he give any information about it. It probably will prove to be the same as P. BARBEI to which species Anderson's description given above, shows it bears a close resemblance.

PYGATHRIX PHAYREI (Blyth).

Semnopithecus phayrei Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 733, pl. XXXI, fig. 3, and p. 1271; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 28; Tickell, Journ. Asiat. Soc. Beng., XXVIII, 1859, p. 428; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 33; Anders., Zool. Exped. Yunnan, 1878, p. 34; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 39; Forbes, Handb. Primates, II, 1894, p. 131.

Semnopithecus obscurus Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, p. 466, (nec Reid).

Semnopithecus argentatus Blyth, Horsf. Cat. Mamm. Mus. E. Ind. Co., 1851, p. 7.

Semnopithecus rubicundus var. C. Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 17.

PHAYRE'S LANGUR.

Type locality. Arakan. Type in Calcutta Museum.

Geogr. Distr. Arakan, in the Passein district of Pegu, and probably northern Tenasserim.

Genl. Char. Hair on top and sides of head long, forming a crest on occiput; tail very long.

Color. Head pale mars brown; upper part of back and shoulders broccoli brown; back, sides and legs dusky inclining to grayish on thighs; arms, hands and feet blackish brown; throat and under parts yellowish white; tail, dusky above, grayish beneath. Ex type Calcutta Museum.

A small, slender, inconspicuous species with a general grayish brown appearance, darkest on the back. I could not find the skull but Anderson who gives a description of it says it "has the interorbital space of moderate length, the forehead rather full, but the supra orbital ridges are not strongly developed, while the external orbital angle of the frontal is rather prominent in adults." He gives no measurements of the skull, but only those of the body and tail, viz.: length of body, (head supposedly included), 462; tail, 539. Blanford states (l. c). that Phayre's Leaf Monkey, as he calls this species, is "found in dense forests, or amongst bamboos on the hill sides and on the banks of streams, usually in flocks of twenty or thirty individuals. It is very shy and wary, and is consequently more often heard than seen, the whole flock when alarmed rushing through the forest shaking the branches violently and leaping from tree to tree. But occasionally, as Tickell observes, an old male stays behind in a safe post of vantage on the top of one of the highest trees, where he may be heard uttering his short, deep, alarm-cry at frequent intervals. This cry is an angry bark, not unlike that of the Hanuman. I was once well scolded from a tree by an old monkey, I believe of this species, on the edge of a half deserted clearing in Southern Arakan. I had done nothing to offend his monkeyship, but he evidently considered me as something unusual and suspicious. Blyth observes that the young of this species, besides making a whining noise to express their wants, emit a cry that might be mistaken for the mew of a cat."

PYGATHRIX FLAVICAUDA Elliot.

Pygathrix flavicauda Elliot, Proc. U. S. Nat. Mus., XXXVIII, 1910, p. 352.

Type locality. Trong, Lower Siam. Type in United States National Museum.

Geogr. Distr. Lower Siam and southern Tenasserim; Kisseraing, and Sir William James Islands, Mergui Archipelago.

Genl. Char. Of the P. OBSCURA group, but legs from hips pale smoke gray, and tail cream color.

Color. Face bare, upper lip, and space over eye flesh color, darker about nose and beneath eyes. Hairs on forehead long, upright, and extending to ears brownish black; hairs on lips and lower cheeks long, and extending backward beyond ears, blackish; top of head and nape yellowish white; dorsal line mummy brown, paler than black; rest of upper parts and flanks black tinged with brown; outer side of arms very dark hair brown, with a reddish tinge on shoulders, and grading into black on wrists and hands; throat sparsely covered with dark brown hairs; under parts grayish brown; outer side of legs smoke gray, with a brownish tinge from knee to ankle; feet blackish; tail uniform cream color. Ex type United States National Museum.

Measurements. Total length, 1,257; tail, 724. Skull: total length, 94.7; occipito-nasal length, 77; Hensel, 66.5; zygomatic width, 70; intertemporal width, 40.7; palatal length, 32.7; median length of nasals, 93; length of upper molar series, 24.4; length of mandible, 68.6; length of lower molar series, 30. Ex type United States National Museum.

This very distinct species can at once be recognized by its cream colored tail and pale legs. The examples from the islands, of which there are only a male and a female, differ slightly in certain particulars. The legs are even paler than those of the type, hands and feet jet black, strongly contrasted with the arms and legs, and the skulls have a flatter braincase and broader rostrum. The material is hardly sufficient to enable definite decision to be reached, and I leave these island examples under the name of the present species, although they may eventually prove to be worthy of a separate designation.

PYGATHRIX ROBINSONI (Thomas).

Presbytis robinsoni Thos., Proc. Zool. Soc. Lond., 1910, p. 634.

ROBINSON'S LANGUR.

Type locality. Ko-Khan, Trang, Northern Malay Peninsula. Type in British Museum.

Genl. Char. Color white, dark beneath. Occipital hairs directed forward, hairs on forehead radiating from points on temples; median crest present.

Color. Upper parts creamy white, with black hairs intermixed; sides of body and belly darker, the black hairs being in the majority; under surface gray, darker on throat and sides of neck; outer side of arms to wrists like back; outer and inner sides of legs gray, dark and light hairs being equally mixed; hands and feet grayish brown; tail grayish white; ear tufts white; face dark, lips white.

Measurements. Total length, 1,389; tail, 824; foot, 177; ear, 30. No dimensions given of skull.

Although Mr. Thomas says this example is "obviously not an albino," yet the coloring is so entirely abnormal both of the fur and face, and also of the hands and feet, that it is most probable it will eventually prove to be an albinistic individual of a dark-colored species, just as the PITHECUS PHILIPPINENSIS Geoff., proved to be an albino of the dark animal the same writer called afterward *palpebrosus.*

PYGATHRIX OBSCURA (Reid).

Semnopithecus obscurus Reid, Proc. Zool. Soc., 1837, p. 14, (desc. nulla); Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 440; *Id.* Mammif. Anim., 1841, p. 486; Less., Spec. Mamm., 1840, p. 65; I. Geoff., Compt. Rend., XV, 1842, p. 719; Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 176; XVI, 1847, p. 734; Cantor, Journ. Asiat. Soc. Beng., XV, 1846, p. 174; Horsf., Ann. Mag. Nat. Hist., XVII, 1846, p. 335; I. Geoff., Cat. Primates, 1851, p. 12; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 27, pl. II; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89; Murie, Proc. Zool. Soc. Lond., 1865, p. 742; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 49; Anders., Zool. Res. Exped. Yunnan, 1878, p. 25; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 46; Thos., Proc. Zool. Soc. Lond., 1886, p. 66; Blanf., Faun. Brit. Ind., Mamm., 1894, p. 41; Forbes, Handb. Primates, II, 1894, p. 123; Flower, Proc. Zool. Soc. Lond., 1900, p. 317.

Presbytis obscura Gray, Handb. Mamm., 1843, p. 3; Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, p. 467; *Id.* XLIV, 1875, p. 10, ext. no.; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 14; Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 269.

Semnopithecus halonifer Cantor, Proc. Linn. Soc. Lond., I, 1845, p. 235; *Id.* Ann. Mag. Nat. Hist., XV, 1845, p. 497; XVII, 1846, p. 335.

DUSKY LANGUR.

Type locality. Unknown.

Geogr. Distr. Tenasserim, Mt. Muleyit, 5,000 feet elevation; Siam.

Color. Fore part and sides of head black, the hairs on forehead rather stiff, those in center standing erect, those on side shooting away at right angles to head; hairs on side of head very long extending far behind ears; crown of head brownish black; occipital crest brownish white; dorsal line Prout's brown, sometimes mummy brown, always lighter than rest of upper parts which are sooty black, this color also extending over the flanks; arms above elbows paler, sometimes yellowish brown, sometimes with a reddish shade; forearms and hands black or brownish black; space around eyes yellow in skin, probably flesh color in life, rest of face black; some white hairs on upper lip and on chin; throat sparsely covered with blackish hairs, as is also the under side of the arms; a black bar across chest at shoulders; rest of under parts grayish brown; outer edge of thigh to knee black; outer side grayish brown; inner side slightly paler; hands and feet black; tail at base above like back, rest dark olive gray, peneath paler.

Measurements. Total length, 1,120; tail, 570; foot, 145, (skin). Skull: total length, 96.6; occipito-nasal length, 80; intertemporal width, 42.8; width of braincase, 55.3; Hensel, 68; zygomatic width, 73.5; median length of nasals, 11.2; length of upper molar series, 27.9; length of upper canines, 17.9; length of mandible, 72.3; length of lower molar series, 33.9.

This is a well marked species of the Malay Peninsula, easily recognizable by the light nuchal crest, and the paler dorsal line amid the general sooty black upper parts. There is a certain amount of variation among individuals some being lighter than others, but they all adhere to the same pattern, and are easily recognizable. The newly born young, according to Anderson, are bright fulvous, but this color soon changes and becomes ashy brown. This rufous color lingers longest on the head, throat, flanks, thighs and apical half of the tail. Reid's mention of this species (l. c.) contains no description of the animal, and the name OBSCURUS could not be accepted had it not been adopted by subsequent authors who gave full descriptions, in some cases taken from Reid's own example, and these were published prior to the bestowal of any other name upon the species. The type of *Semnopithecus albo-cinereus* Eydoux et Souleyet, is in the Paris Museum, and, as their plate shows, is the same as S. OBSCURUS Reid.

Desmarest's type of *S. albo-cinereus* is not in the Museum, and to-day it is impossible to identify his species.

Flower, (l. c.) says "Cantor found this species most common in Penang and Singapore, and that it also occurs on the Peninsula." It is doubtful, however, he adds, "whether it does occur at Singapore at the present time. In April, 1895," he continues, "I found this species very common in Kedah, living in the highest trees along the banks of the Kedah River and the tributaries, either solitary or in parties of about half a dozen; they were very active and wild. In the Botanical Gardens, Penang, I have seen this species playing in the trees. On Penang Hill I have occasionally seen Lutongs which appeared to belong to this species; they are very shy, and it is difficult to see much of them before they disappear among the jungle trees. In the Museum at Taiping there are specimens from the Larut Hills, Perak. In April 1898 at about 3,500 feet elevation in the Larut Hills, I came on a party of from 10 to 20 Semnopitheci of this, or a closely allied species."

PYGATHRIX CARBO (Thomas and Wroughton).

Presbytis obscura carbo Thos. and Wrought., Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 534.

Type locality. Langkawi Island, Straits of Malacca. Type in British Museum.

Geogr. Distr. Terautau and Langkawi islands, Straits of Malacca.

Genl. Char. Much darker than P. OBSCURA.

Color. Superciliary stripe and whiskers black; fore part of head blackish brown, rest of head and hind neck brownish gray; upper parts of body, arms, hands and feet black tinged with brown on dorsal region, and on arms to elbows; legs from hips to ankles grayish brown; chin and under parts of body, and inner side of arms blackish brown; inner side of legs dark gray; tail above slate gray, paler beneath; ears black. Ex type British Museum.

Measurements. Total length, 1,380; tail, 800; foot, 125. Skull: total length, 104.2; occipito-nasal length, 83.8; intertemporal width, 40.6; breadth of braincase, 57.1; median length of nasals, 13.9; palatal length, 37.6; length of upper molar series, 26.6; length of mandible, 73.2; length of lower molar series, 35. Ex type British Museum.

This island race while resembling P. OBSCURA in its general style of coloring is very much darker almost black in fact; back varies only in the parts mentioned above with a dark brown hue.

Three specimens are in the British Museum from the islands above named.

PYGATHRIX SANCTORUM (Elliot).

Presbytis sanctorum Elliot, Proc. U. S. Nat. Mus., XXXVIII, 1910, p. 351.

Type locality. St. Matthew Island. Mergui Archipelago. Type in United States National Museum.

Genl. Char. Similar in color to P. CARBO from Terautau and Langkawi islands, Straits of Malacca, but different cranial characters. Teeth large; rostrum longer as is also the palate; palatal arch pointed, reaching nearly to posterior edge of second molar; pterygoids much longer, widely spread; pterygoid fossa contracted, widening at posterior edge of palate; arch longer and more curved; occipital region above foramen magnum broader. Braincase longer and wider, and orbits higher than wide, not round. Mandible and lower tooth row longer.

Color. This species is very like the Terautau animal, except that the nuchal crest is creamy white, and the tail is a pale buffy gray.

Measurements. Total length, 703.2; tail, 508. Skull: total length, 98.8; occipito-nasal length, 81.7; Hensel, 70.5; zygomatic width, 73.8; intertemporal width, 40.6; palatal length, 31.2; length of upper molar series, 27.3; length of mandible, 67.1; length of lower molar series, 34.3. Ex type United States National Museum.

The island forms of P. OBSCURA are apparently characterized by having much larger teeth than are seen with those on the mainland. While resembling the species of the islands of the Straits of Malacca, in general coloration, the many and important cranial differences forbid the idea that they should be considered the same species.

PYGATHRIX NUBIGENA (Elliot).

Presbytis nubigena Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 268.

Type locality. 'Keka,' Malacca. (Cantor). Type in British Museum.

Geogr. Distr. Southern Malacca.

Genl. Char. Eyelids, lips and chin flesh color, face brownish black, (skin). General color very dark above, top of head black, under parts light; hair radiating from a central point on the crown. Short occipital crest.

Color. Long black hairs on forehead directed outward, top of head black, hairs grayish white at base; neck and entire upper part of body, and outer side of arms Prout's brown; wrists and hands black; outer side of thighs grayish white; from hips to below knees on top is a brownish black line much mixed with brownish gray hairs near hips; feet blackish; hairs from eyes across temples to ears seal brown; whiskers beneath yellowish gray; sides of neck, chin, throat, inner side of arms and legs, under parts of body and flanks, grayish white; tail, Prout's brown for basal half, grading into blackish brown for the remainder. Ex type British Museum.

Measurements. Skull: total length, 90; occipito-nasal length, 74.2; intertemporal width, 40.8; breadth of braincase, 54; Hensel, 62.2; zygomatic width, 67.6; median length of nasals, 11.5; palatal length, 30; length of upper molar series, 27.9; length of mandible, 68.4; length of lower molar series, 31.9. Ex type British Museum.

Several specimens of this form from the southern part of Malacca are in the British Museum, resembling each other in the color of their coats, much darker than those from the Straits Settlements and lower parts of the peninsula, and more like P. OBSCURA but without the nuchal patch, and not so dark in color. They belong to the white—or grayish—thigh group of these monkeys. These examples had gone under the name of *albo-cinereus* Desmarest, but that species has "épaules, flancs, face externe du haut des bras et des cuisses d'un *gris clair;* milieu du dos d'un gris un peu plus foncé," which in no wise described any Sumatran PYGATHRIX that I have seen, and comes nearer to P. AYGULA than any other. Eydoux and Souleyet in their work on the voyage of the 'Bonite' describe and figure a monkey under the name of *albo-cinereus* Desmarest, but which answers in no respect the description that Author gives of his species, and which is evidently the *Semnopithecus* OBSCURUS Reid.

PYGATHRIX DILECTA (Elliot).

Presbytis dilecta Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 270.

Type locality. Selangore, Malacca. Type in British Museum.

Genl. Char. Hairs radiating from a point on forehead; general hue of body pale, thighs white, with dark stripe from near hip to ankle over knee; tail moderately long.

Color. Brown superciliary stripe, turning backwards over temples at corners of eyes; face black; eyelids apparently flesh color; crown grayish brown, hairs whitish at base; occiput, hind neck, upper part of body and shoulders, outer side of arms to elbow, and flanks, drab; an indistinct purplish gray stripe on flanks; outer side of forearms grayish brown, grading into black on wrists and hands; thighs white tinged with gray, and with a brown stripe from near hip to near ankle, darkest at knee, where it is blackish brown, gradually fading away towards hip and ankle; ankles and feet black; chin, sides of neck, throat, inner side of limbs and under parts of body grayish white; tail above like back, grading into dark brown with whitish hairs intermingled on apical half, beneath grayish white at root remainder like upper side. Ex type British Museum.

Measurements. Total length, 1,120; tail, 620; foot, 150, (skin). Skull: total length, 89.5; occipito-nasal length, 77.7; intertemporal width, 43.5; Hensel, 58.7; zygomatic width, 70.3; breadth of braincase, 50.3; median length of nasals, .69; palatal length, 25.2; length of upper molar series, 21.2; length of mandible, 54.2; length of lower molar series, 27. Ex type British Museum.

This is a pale species of a drab color with very white thighs both on outer and inner sides. It differs from P. RHIONIS in its pale legs and general color of the upper parts, and from P. CANA by lacking the pale occipital crest, and black legs.

PYGATHRIX NATUNÆ (Thomas and Hartert).

Semnopithecus natunæ Thos. and Hart., Novitat. Zool., I, 1894, p. 652.

NATUNA LANGUR.

Type locality. Mount Ranai, Island of Natuna. Type in British Museum.

Geogr. Distr. Island of Natuna.

Genl. Char. Hair radiating from a point on forehead, crested on occiput.

Color. Head black; occiput, hind neck, and upper parts of body purplish black, hairs gray at base; outer side of arms, line on outer edge of thighs, and outer side of legs below knees, together with hands and feet jet black; sides of face and neck, chin, throat, under parts of body, outer side of thighs to below knees, inner side of the knees, and inner side of arms to wrist white; tail at base like back, remainder black; space around eyes and on upper lip flesh color, rest of face black. Ex type British Museum.

Measurements. Total length, 1,170; tail, 690; foot, 160. Skull: total length, 90.3; occipito-nasal length, 77.5; intertemporal width, 23.4; breadth of braincase, 54.3; Hensel, 24.5; zygomatic width, 66.3; median length of nasals, .68; palatal length, 27; length of upper molar series, 23.9; length of mandible, 66; length of lower molar series, 29.2. Ex type British Museum.

This is a plainly colored animal, its only colors a purplish black and white, but from the distribution of these hues, is rather conspicuous than otherwise. On the upper parts it does not look unlike P. FEMORALIS, but is at once distinguished by its white thighs.

PYGATHRIX RHIONIS (Miller).

Presbytis rhionis Miller, Miscel. Coll. Smith. Inst., Wash., 1903, p. 64.

Type locality. Telok Pemudong, Pulo Bitang, Rhio Archipelago. Type in United States National Museum.

Genl. Char. Like P. OBSCURA but not so dark. Blackish tinge on back; legs and tail absent; line along flanks narrow.

Color. Forehead and temples black or nearly so, front of crown lighter; upper parts broccoli brown; shoulders wood brown; flanks and lumbar region chocolate; arms seal brown to elbows, above like body; from axillæ to thighs a faint dark line bordering white of under parts; thighs brownish black to a patch, which is white tinged with cream color; entire under surface and inner side of arms to elbows, and legs to knees, white tinged with gray, darkest on chest and thighs; hands and feet blackish; tail, basal fourth above broccoli brown, grading into seal brown at tip, beneath like upper surface; face slaty in life; eyelids and lips fleshy white; palms of hands and soles of feet black. Ex type United States National Museum.

Measurements. Total length, 1,173; tail, 705; foot, 150. Skull: total length, 86; occipito-nasal length, 77.2; Hensel, 56.5; zygomatic width, 65.3; intertemporal width, 45.3; palatal length, 27.5; median length of nasals, .79; length of upper molar series, 22.7; length of mandible, 62.2; length of lower molar series, 28.8. Ex type United States National Museum.

Mr. Miller compares this species with P. NATUNÆ Thos. and Hart., but its nearest ally is P. OBSCURA, from which it differs only in the narrow blackish line along the flanks.

PYGATHRIX CANA (Miller).

Presbytis cana Miller, Proc. U. S. Nat. Mus., XXXI, 1906, p. 275.

Type locality. Pulo Kundur; Rhio Archipelago. Type in United States National Museum.

Genl. Char. Only differing from P. RHIONIS in a rather broad, indistinct dark band along flanks, and the basal portion of hairs at the radiating point on crown being white. Ex type United States National Museum.

Measurements. Total length, 1,173; tail, 705. Skull: total length, 89.1; occipito-nasal length, 78; Hensel, 60.4; zygomatic width, .73; intertemporal width, 47.8; palatal length, 27.9; median length of nasals, .80; length of upper molar series, 23.4; length of mandible, 65.4; length of lower molar series, 27.4. Ex type United States National Museum.

PYGATHRIX SIAMENSIS (Müller and Schlegel).

Semnopithecus siamensis Müll. und Schleg., Verhandl. Geschied., 1841, p. 60; Schinz, Syn. Mamm., I, 1844, p. 40; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 25; I. Geoff., Cat. Primates, 1851, p. 16; Gerv., Hist. Nat. Mamm., 1854, p. 63; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Blyth, Journ. Asiat. Soc. Beng., XLIV, 1875, p. 9, extra no.; Anders., Zool. Res. Exped. Yunnan, 1878, p. 37; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 51.

Semnopithecus nigrimanus I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 546; *Id.* Cat. Primates, 1851, p. 16; Reichenb., Vollständ. Naturg. Affen, 1862, p. 99, no fig.; Mivart, Proc. Zool. Soc. Lond., 1864, p. 626; Blyth, Journ. Asiat. Soc. Beng., XLIV, 1875, p. 9, extra no.

Semnopithecus albo-cinereus Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 175; XVI, 1847, p. 733; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 29; Blyth, Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 15.

Semnopithecus argentatus Blyth, Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 7.

Semnopithecus (*Trachypithecus*) *siamensis* Reichenb., Vollständ. Naturg. Affen, 1862, p. 91, not figured.

Semnopithecus cinereus Mivart, Proc. Zool. Soc. Lond., 1864, p. 626.

Presbytis cristatus (!) (nec Raffles), Blyth, Journ. Asiat. Soc. Beng., 1875, p. 9, extra no.

Type locality. Siam, (Diard, Müller and Schlegel).

Genl. Char. Head with a moderate compressed crest.

Color. Forehead blackish brown; rest of head and upper parts grayish brown; cheeks pale yellowish brown; hands and feet brownish black; tail blackish; a whitish line on inner side of leg; under parts yellowish gray; face black; around eyes and mouth flesh color; hairs on head radiating from a center.

A specimen in the Calcutta Museum may be described as follows: Top of head blackish brown, hairs radiating from a central point; back of head and neck, and entire upper part of body and arms broccoli brown, lightest on occiput; legs from knees to ankles broccoli brown; hands and feet blackish brown; under parts, anal region and thighs yellowish white; tail very long, bistre, being darker than back. Hair on occiput forming a short pointed crest.

Measurements. Total length, 1,420; tail, 910; foot, 155, (skin). Skull: total length, 106.2; occipito-nasal length, 86.4; intertemporal width, 39.2; breadth of braincase, 56.6; Hensel, 38; zygomatic width, 74.6; median length of nasals, 10.7; palatal length, 38.7; length of upper canines, 18.7; length of upper molar series, 26.7; length of mandible, 75.2; length of lower molar series, 35. Ex specimen from Takamen, Siam, in British Museum.

PYGATHRIX CATEMANA (Lyon).

Presbytis catemana Lyon, Proc. U. S. Nat. Mus., XXXIV, 1908, p. 672.

Type locality. Kateman River, Eastern Sumatra. Type in United States National Museum.

Color. Exactly like P. CANA, but patch on thigh is grayish and does not go to side of rump. Ex type United States National Museum.

Measurements. Total length, 1,200; tail, 740; foot, 175. Skull: total length, 89.1; occipito-nasal length, 77.7; zygomatic width, 68.3; Hensel, 60.4; intertemporal width, 46.8; palatal length, 27; median length of nasals, .64; length of upper molar series, 23. Ex type United States National Museum.

PYGATHRIX AYGULA (Linnæus).

Simia aygula Linn., Syst. Nat., I, 1758, p. 27; I, 1766, p. 39.

Presbytis mitrata Esch., Kotzeb., Reise, 1821, p. 196, pl., figs. 1, 2, 3; Less., Man. Mamm., 1827, p. 44.

Semnopithecus comatus Desm., Mamm., Suppl., 1822, p. 533; F. Cuv., Hist. Nat. Mamm., 1825, pl. XIII; Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 569; Less., Man. Mamm., 1827, p. 41; Temm., Mon. Mamm., I, 1827, p. 14; Desm., Dict. Scien. Nat., XLVIII, 1827, p. 438; Griff., Anim. Kingd., V, 1827, p. 10; Cuv., Règn. Anim., I, 1829, p. 94, (Part.); Fisch., Syn. Mamm., 1829, p. 16; I. Geoff., Bélang., Voy., Zool., 1834, p. 40; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 87, pl. XXIV; V, 1855, p. 24; Less., Spec. Mamm., 1840,

p. 61; Martin, Mammif. Anim., 1841, p. 468; Schinz, Syn. Mamm., I, 1844, p. 38; I. Geoff., Cat. Primates, 1851, p. 16; Gerv., Hist. Nat. Mamm., I, 1854, p. 63; Beyr., Abhandl. Berl. Akad. Wiss., 1860, p. 7; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 37; Anders., Zool. Res. Exped. Yunnan, 1878, p. 36; Forbes, Handb. Primates, II, 1894, p. 137.

Semnopithecus fulvogriseus Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; Fisch., Syn. Mamm., 1829, p. 15; I. Geoff., Bélang., Voy., Zool., 1834, p. 36; Martin, Charlesw., Mag. Nat. Hist., II, 1838, New Ser., p. 439.

Presbytis mitrula (!) Griff., Anim. Kingd., V, 1827, p. 7.

Semnopithecus fascicularis Owen, Proc. Zool. Soc. Lond., 1833, p. 75.

Semnopithecus mitratus Schleg., Essai Phys. Serp., Pt. Gén., 1837, p. 237; Müll. und Schleg., Verhandl., 1839-44, pp. 60, 65, pl. XII, fig. 2, juv. pl. XII bis, fig. 1; I. Geoff., Cat. Primates, 1851, p. 16; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 15; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Mivart, Proc. Zool. Soc. Lond., 1864, p. 626, (note); Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 16; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 37; Anders., Zool. Res. Exped. Yunnan, 1878, p. 36; Forbes, Handb. Primates, II, 1894, p. 137; Flow., Proc. Zool. Soc. Lond., 1900, p. 319.

Semnopithecus (*Trachypithecus*) *comatus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 91, pl. X, figs. 217-219, 222-224.

Presbytis aygula Thos., Proc. Zool. Soc. Lond., 1911, p. 128.

Type locality. "India."

Geogr. Distr. Island of Java.

Genl. Char. Head crested; fur long, loose, soft; tail long.

Color. Top and sides of head to ears black; hairs forming a high crest from forehead to nape; hind neck, upper back, shoulders, outer side of arms, iron gray; dorsal region whitish gray, flanks darker but not so dark as shoulders; outer side of thighs gray, the upper edge iron gray; outer side of legs below knees iron gray; sides of neck, entire under parts from chin to root of tail, and inner side of limbs white; a slight yellowish tinge on arms near wrist; tail above, and a line over rump at root of tail, continuing across thighs black, hairs tipped with white, beneath whitish; hands and feet whitish on upper parts, outer sides, and a band crossing at base of fingers and toes iron gray.

Measurements. Total length, 1,150; tail, 620; foot, 150. Skull: total length, 95.3; occipito-nasal length, 82.4; intertemporal width, 44.1; width of braincase, 55.2; Hensel, 58.6; zygomatic width, 71.1; length of upper molar series, 25; length of mandible, 66.2; length of lower molar series, 30. Ex specimen from Java, British Museum.

PYGATHRIX FUSCO-MURINA (Elliot).

Presbytis fusco-murina Elliot, Proc. Biol. Soc. Wash., XIX, 1906, p. 49; *Id.* Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 573, Zool. Ser.

Type locality. Telok Betong, South Sumatra. Type in Field Museum of Natural History, Chicago.

Genl. Char. A long occipital crest, inclining backward, face, hands and feet, white or flesh colored.

Color. A narrow dark line across forehead runinng backward on side of head above ears, and widening as it goes to occiput, where it joins the long central occipital crest; entire upper parts of body, outer side of arms from wrist, and upper side of tail dark mouse gray tinged with brown; top and sides of head beneath the dark line, cheeks, throat, under side of body, inner side of arms, legs from hips on both inner and outer sides, face, hands, feet, and tail beneath, white. Ex type Field Museum.

Measurements. Total length (dried skin), 1,280; tail, 600. Skull: occipito-nasal length, 95; Hensel, 61; zygomatic width, 71; intertemporal constriction, 45.5; breadth across orbits, 60; width of braincase, 56; width of orbit, 23; height of orbit, 24.5; height of nasal aperture, 13; breadth of nasal aperture, 9; median length of nasals, 9; palatal length, 30; breadth of palate inside m^2, 19; length of upper molar series, alveolar border, 24; length of upper molars, 16; length of upper canines, 15; length of mandible, 59; length of lower molar series, 29; length of lower molars, 18; length of lower canines, 12.5. Ex type Field Museum.

Belonging to the group containing HOSEI and THOMASI, this species is quite differently colored. The white crown is encircled by a dark line as in P. THOMASI, but there is no central line in the white so conspicuous in the species named. It is strikingly different also in its white face, hands, feet and legs.

Pygathrix sabana (Thomas).

Semnopithecus sabanus Thos., Ann. Mag. Nat. Hist., XII, 6th Ser., 1893, p. 230, pl. VII; Forbes, Handb. Primates, II, 1894, p. 116; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 572. Zool. Ser.

PAITAN LANGUR.

Type locality. Paitan, North Borneo. Type in British Museum.

Geogr. Distr. Borneo, range unknown.

Genl. Char. Face flesh colored between orbits and around cheeks; chin, sides of neck, throat and chest grayish. Head crested.

Color. A flattened crest along middle line of head from forehead to rear of crown, the hairs colored like those on top of head, gray at base, the apical half black; hairs from cheeks long, passing over temples, black; entire upper parts of body, shoulders, upper arms and flanks iron gray; outer side of forearms paler gray; legs from hips to ankles on outer side, gray, paler than back, but darker than forearms; upper parts of face across orbits flesh color, rest black with short white hairs on lips; entire under parts of body, inner side of arms to elbows, and legs white; inner side of forearms gray slightly paler than on outer side; hands and feet black; tail above iron gray, beneath paler. Ex type British Museum.

Measurements. Total length, 1,440; tail, 880; foot, 165, (skin). Skull: total length, 94.2; occipito-nasal length, 84.5; intertemporal width, 47; Hensel, 61.2; zygomatic width, 73.5; breadth of braincase, 60.5; median length of nasals, .89; palatal length, 27.9; length of upper molar series, 24.7; length of mandible, 65.3; length of lower molar series, 30. Ex type British Museum.

This is a fine gray species with a peculiar flat narrow crest along center of head.

Pygathrix everetti (Thomas).

Semnopithecus everetti Thos., Proc. Zool. Soc. Lond., 1892, p. 582, pl. XLI; Hose, Mamm. Borneo, 1893, p. 15; Forbes, Handb. Primates, II, 1894, p. 120, pl. XXIV.

EVERETT'S LANGUR.

Type locality. Mount Kina-Balu, Borneo, at 3,500 feet elevation. Type in British Museum.

Geogr. Distr. Mount Kina-Balu, Dulit, and Batu Song, Sarawak, Borneo, at an elevation of 3,000 to 3,500 feet.

Genl. Char. Similar to P. hosei, but where that species is white this is cream color.

Color. Nose, eyelids and lips flesh color, rest of face black; top of head to bottom of hind neck jet black; a white spot over nose; upper parts of body and limbs, dark gray like P. HOSEI; sides of head and neck, chin and entire under parts of body, and inner sides of limbs cream color; hands and feet black; tail above dark gray, beneath paler. Ex type British Museum.

Measurements. Total length, 1,300; tail, 740; foot, 150, (skin). Skull: total length, 92.5; occipito-nasal length, 81.5; intertemporal width, 43.4; Hensel, 60; zygomatic width, 69.5; breadth of braincase, 53.7; median length of nasals, 9; palatal length, 26; length of upper molar series, 24.4; length of mandible, 64.3; length of lower molar series, 27.1 Ex type British Museum.

This species resembles P. HOSEI very closely, the chief and really only difference is that the head is mostly black instead of white, and the under parts cream color. Its proper rank will probably be that of a subspecies, but as no intermediate examples of the forms have been obtained, it must for the present be regarded as an independent species. Mr. Hose says both species are found on Mt. Dulit and also on Mt. Batu Song, but P. EVERETTI has not been found in the low country.

PYGATHRIX HOSEI (Thomas).

Semnopithecus hosei Thos., Proc. Zool. Soc. Lond., 1889, p. 159, pl. XVI; Hose, Mamm. Borneo, 1893, p. 10; Forbes, Handb. Primates, II, 1894, p. 117; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 572. Zool. Ser.

HOSE'S LANGUR.

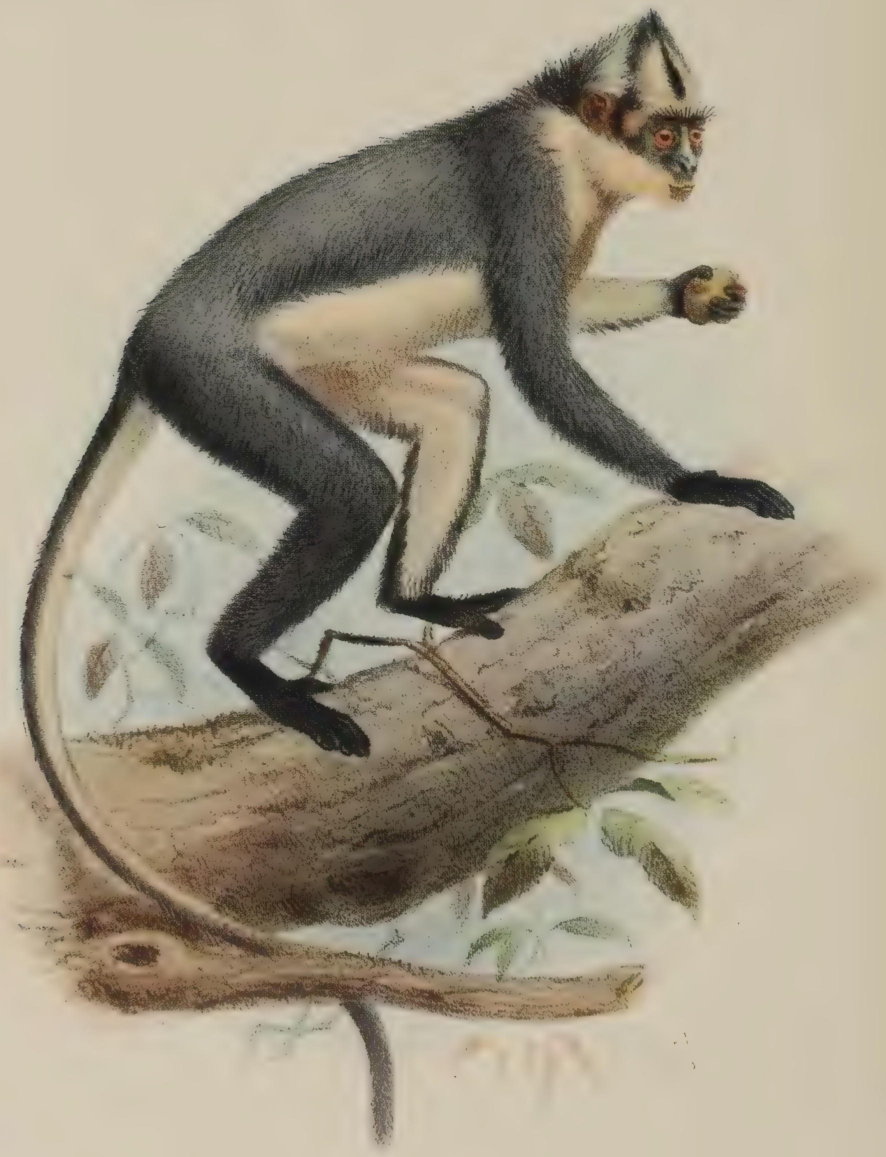
Type locality. Niah in the Baram district northwest coast of Borneo. Type in British Museum.

Geogr. Distr. Baram district, Sarawak; Mt. Dulit; Kina-Balu? 4,000 feet elevation, Borneo.

Genl. Char. Crest black, sloping backward; forehead and cheeks white.

Color. Nose, eyelids and upper lip flesh color, rest of face black; upper part and sides of body, hoary, mixed black and white hairs; forehead, sides of head and neck, chin, (tufted), entire under parts, inner side of arms to middle of forearm, and of legs below knee pure white; outer side of limbs like body, grading into black on hands and feet; tail hoary gray, darkest above; eyebrows long, black. Ex type British Museum.

Measurements. Total length, 1,190; tail, 670; foot, 154; length of crest, 40. Skull: total length, 89.7; occipito-nasal length, 79.2;



PYGATHRIX THOMASI

intertemporal width, 46.6; Hensel, 57.6; zygomatic width, 67.8; breadth of braincase, 53.4; median length of nasals, 10; palatal length, 26.4; length of upper molar series, 25.9; length of mandible, 60.8; length of lower molar series, 28. Ex type British Museum.

Mr. Hose, (l. c.) says of this species that "this handsome monkey is perhaps my finest discovery among the Mammals. The type was shot at a place called Niah in the Baram district. I have since procured several specimens in different parts of the country, but although it is often seen in the low country I think we must consider it to be a mountain species which leaves the mountains at certain times in search of fruit. It ascends Mt. Dulit to the height of 4,000 feet, but is more common at 2,000 feet. It frequents the salt springs which are common in the interior, churning up the mud, and it is at these salt springs that the Punans procure numbers of specimens with the blow pipe and poisoned arrows. From this monkey the Bezoar stones are obtained, being found either in the gall bladder or near it. The noise that this animal makes is loud and distinct—'Gagah, gagah!' The young resemble the color of the adults, and are exceedingly pretty little things, but they won't live long in confinement and would never bear a voyage to England, as they suffer severely from sea sickness. The Kyan name is 'Bengat.' "

PYGATHRIX THOMASI (Collett).

Semnopithecus thomasi Collett, Proc. Zool. Soc. Lond., 1892, p. 613, pl. XIII; Forbes, Handb. Primates, II, 1894, p. 119.

THOMAS'S LANGUR.

Type locality. Langkat district, northeast Sumatra. Type in the University Zoological Museum at Christiania, Norway.

Geogr. Distr. Northeast Sumatra.

Genl. Char. Similar to P. HOSEI, but the white of the forehead and cheeks is separated by a black band running from the mouth to the ear. Pointed crest, sloping from forehead backward, and from occiput forwards; tail very long.

Color. Crest white with a black stripe in the center on front, and another on sides from before ears to apex, which is also black; upper parts of body and sides, and outer side of limbs dark gray; black stripe from upper jaw to ear; cheeks, chin, sides of neck, entire under parts, and inner side of limbs white; hands and feet black; tail above dark gray, beneath creamy white. Iris brown. Ex co-type British Museum.

Old male is darker, with upper part of head brownish black, front whitish, and upper part of cheeks black.

Measurements. Old male, total length, 1,430; tail, 810. Skull: greatest length, 104; zygomatic breadth, 80; Hensel, 73; intertemporal width, 46; interorbital width, 8; width of braincase, 69; median length of nasals, 12; palatal length, 34; length of upper molar series, 27; length of upper canines, 20. Collett, ex type. A skull of a female in British Museum measures somewhat less. Total length, 90.5; occipito-nasal length, 80.4; zygomatic breadth, 70; Hensel, 56; palatal length, 27.

Mr. Collett gives the following account of this species, (l. c.): "These monkeys were only met with by Herr Iversen in the Langkai district and were not observed in Deli. They were fairly numerous on several of the estates, especially at Glen Bervie and Beckri. Their haunts were in the highest trees, and they never descended of their own accord to the ground, or visited the rice fields. Herr Iversen saw, however, one wounded individual take to flight on the ground. They always live in companies, and inhabit the dry spots in the thickest parts of the forests. They appear to be non-migratory, and may be met with at all times of the year in almost the same part of the forest. They hardly ever visited the more open places, but kept to the highest tree-tops, where they moved about with the greatest ease, and made the most astonishing leaps through the branches. They were, on the whole, excessively shy; if they found themselves discovered, they endeavored at once to hide, and the mothers would leave their young sitting on the branches whilst they themselves sought shelter in the tree-tops. When hunted they all took to flight in the same direction, so that the companies were not dispersed.

"The companies appeared to consist chiefly of full-grown individuals, and young ones were but seldom seen. An occasional half grown individual, however, might be noticed following the old ones; babies were not often seen, but these are, on the whole, more difficult to observe, as they are carried by the mother under her belly. The young one brought home was noticed through the mother deserting it, after which it began to shriek. They have a very penetrating cry, which they generally utter in chorus after one has given the note. In the individuals which have been examined no fœtus has ever been found. Possibly the pregnant females and the younger ones hide themselves more closely.

"They were seen in activity only in the daytime, and were not heard to cry at night. They lived, it appeared, only on fruits. In their stomachs were chiefly found the soft pulp of a fruit, belonging to a foliated tree, having a stony kernel. They were often observed foraging in company with *Hylobates syndactylus,* but with this exception they were never seen along with other monkeys. One individual which was taken alive, proved to be wild and untamable."

PYGATHRIX POTENZIANI (Bonaparte).

Semnopithecus potenziani Bonp., Comptes Rendus, XLIII, 1856, p. 412, (note, desc. insufficient).

Semnopithecus chrysogaster Licht., Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1879, p. 830, pl. IVb; Blanf., Proc. Zool. Soc. Lond., 1887, p. 627; *Id.* Faun. Brit. Ind., Mamm., 1891, p. 38.

Presbytis chrysogaster Licht., Peters, Proc. Zool. Soc. Lond., 1866, p. 429; Blyth, Mamm. and Birds Burma, 1875, p. 10.

Semnopithecus pileatus Anders., Exped. Yunnan, Zool., 1878, p. 13. (In synonymy).

RED-BELLIED LANGUR.

Type locality. ——— ? Type in Berlin Museum.

Geogr. Distr. Sipora, and South Pagi islands, Mettawee Group. (Modigliani), (Abbott).

Genl. Char. Small compressed crest from crown to nape; whisker tufts absent. Chin and lips with few white hairs.

Color. Patch on top of head jet black; front and sides of head, and behind ears grayish white; hind neck black, the hairs rufous at base and tipped with black, the rufous showing on sides and above shoulders; rest of body, limbs, hands, feet and tail black, the rufous of the base of hairs giving a tinge to the black; throat and chest grayish white; under parts rufous. Young yellow. Ex type Berlin Museum of *P. chrysogaster.*

Measurements. Total length, 1,140; tail, 550. Skull: total length, 102; Hensel, 66; occipito-nasal length, 97.7; zygomatic width, 75; intertemporal width, 41.1; greatest width of braincase, 54.6; palatal length, 36.1; median length of nasals, 11.9; length of upper molar series, 29.2; length of mandible, 74; length of lower molar series, 33.9; length of canines, 17.

This species has been considered the same as P. PILEATUS Blyth, from which, however, it is quite distinct. Two examples are in the Berlin Museum, the type, an adult animal from which my description was taken, and a young one. They were stated to have been obtained in Tenasserim, but that was a mistake as the species inhabits the Mettawee group of islands off the west coast of Sumatra.

A specimen in the British Museum obtained from the Genoa Museum and procured by Dr. Modigliani in Sipora, Mettawee Islands, answers to the description of *S. potenziani* Bon., and is the same as *S. chrysogaster* Peters. The habitat of the species is therefore fixed. It has also been taken on South Pagi Island of the same group by Dr. Abbott, who sent a series of examples to the United States National Museum.

Pygathrix françoisi (Pousargues).

Semnopithecus françoisi Pousarg., Bull. Mus. Hist. Nat. Paris, 1898, p. 319.

Type locality. Boundary of Tonkin and China. Type in Paris Museum.

Genl. Char. Upright, lengthened, slender crest from middle of occiput; body slender, limbs and tail long.

Color. Band from angle of mouth across cheeks to ears, and hairs on top of ears white, entire rest of pelage, head, body, limbs, hands, feet and tail black. Ex type Paris Museum.

Measurements. Total length, 1,231.9; tail, 748.7; foot, 139.7. Skull: total length, 97; occipito-nasal length, 83; Hensel, 64; zygomatic width, 76; intertemporal width, 48; palatal length, 28; breadth of braincase, 60; median length of nasals, 11; length of upper molar series, 26; length of mandible, 63; length of lower molar series, 31. Ex type Paris Museum.

While resembling in some respects P. potenziani, it differs from that species in having the under parts of the body black, no rufous appearing anywhere. Its habitat also, on the borders of Tonkin and China, is far removed from the Mettawee Islands where P. potenziani is found, for there is no proof that that species inhabits Tenasserim or any portion of the continent, being, so far as known, strictly an island species.

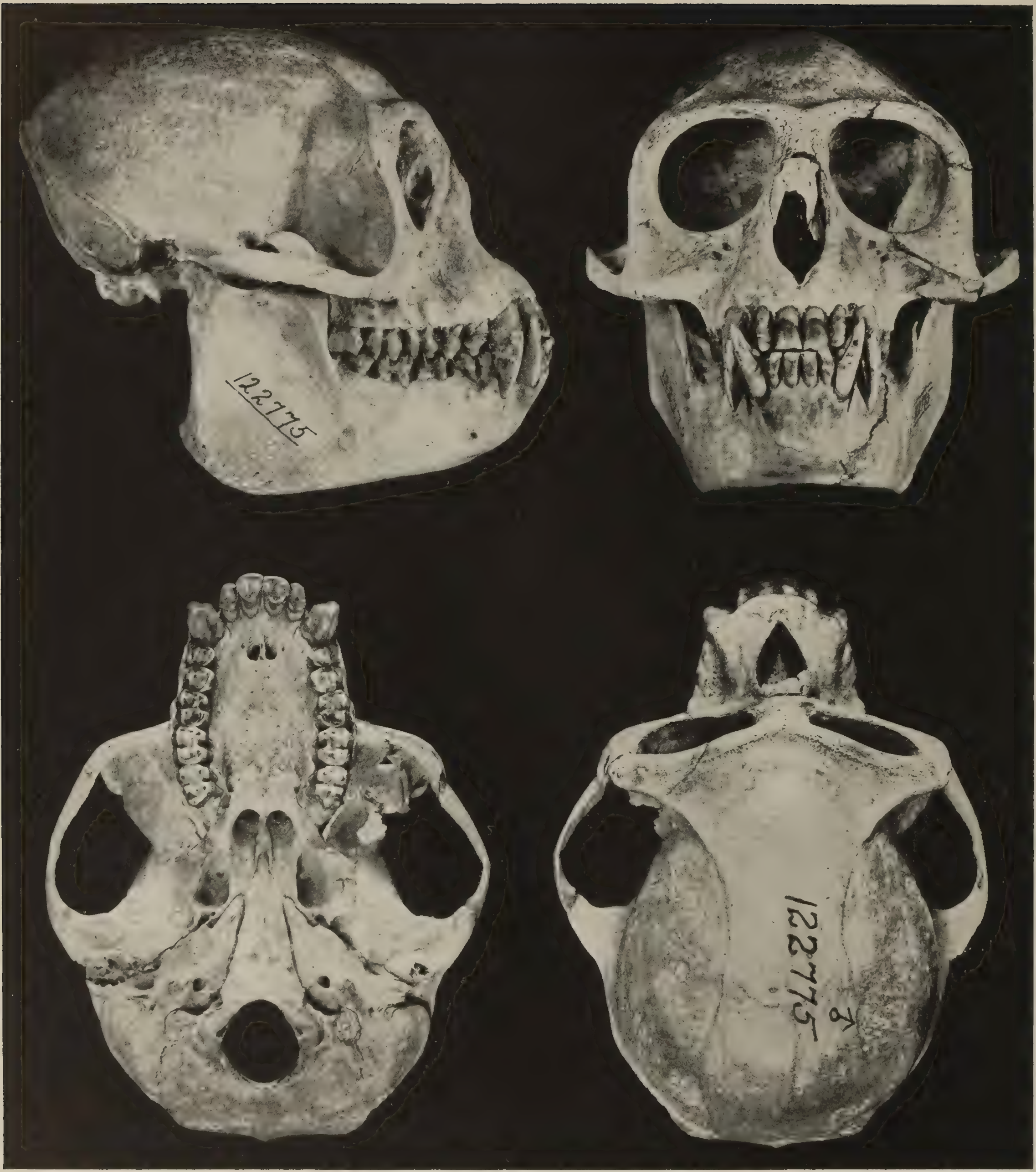
Subgenus Presbypithecus.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{2-2}{2-2};\quad \text{M. } \frac{3-3}{3-3} = 32.$$

Hair on head crested, sometimes radiating from a central point. Pelage brown or black.

Pygathrix cephaloloptera (Zimmermann).

The Lion-tailed Monkey (B) Penn., Syn. Mamm., 1771, p. 109, pl. CVIII, fig. 2.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PYGATHRIX CEPHALOLOPTERA.

No. 122775 U. S. Nat. Mus. Coll. ⅘ Nat. Size.

The Purple-faced Monkey Penn., Hist. Quad., I, 3rd ed., 1793, p. 199, pl. XLIII; Shaw, Gen. Zool., I, 1800, Pt. I, pl. XIII.

Cercopithecus kephalopterus (!) Zimm., Geog. Gesch., II, 1780, p. 185.

Cercopithecus cephalopterus (!) Bodd., Elench. Anim., 1785, p. 58; Fisch., Syn. Anim., 1829, p. 17.

Simia veter Shaw, Gen. Zool., I, Pt. I, 1800, p. 36.

**Cercopithecus latibarbatus* Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 94; Desm., Nouv. Dict. Hist. Nat., XV, 1817, p. 578; Kuhl, Beitr. Zool., 1820, p. 10; Desm., Mamm., 1820, p. 57; Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 568; Less., Man. Mamm., 1827, p. 35; Griff., Anim. Kingd., V, 1827, p. 11.

Simia latibarbata Cuv., Dict. Scien. Nat., XX, 1821, p. 32.

Cercopithecus leucoprymnus Otto, Nov. Acta, Acad. Caes. Leop., XII, 1825, p. 505, pl. XLVI bis; Less., Man. Mamm., 1827, p. 37; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 10, 8me Leçon.

Semnopithecus fulvogriseus Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; I. Geoff., Bélang., Voy., Zool., 1834, p. 36, (Part.); *Id.* Compt. Rend., XV, 1842, p. 719; Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 439; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89.

Semnopithecus leucoprymnus Desm., Dict. Scien. Nat., XLVIII, 1827, p. 439; Geoff., Cours Hist. Nat. Mamm., 1828, Sect. E. 8, p. 10; Fisch., Syn. Mamm., 1829, p. 16; Less., Compl. Buff., IV, 1828, p. 22; *Id.* Spec. Mamm., 1840, p. 57; I. Geoff., Bélang., Voy., Zool., 1834, p. 36, (Part.); *Id.* Cat. Primates, 1851, p. 12; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 96; V, 1855, p. 25; Müll. und Schleg., Verhandl., 1839-44, p. 59; Martin, Mammif. Anim., 1841, p. 482; Schinz, Syn. Mamm., I, 1844, p. 40; Gerv., Hist. Nat. Mamm., 1854, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim., 1856, p. 87; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 51; Anders., Zool. Res. Exped. Yunnan, 1878, p. 22; Blanf., Faun. Brit. Ind., Mamm., 1888-9, p. 34; Forbes, Handb. Primates, II, 1894, p. 113.

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*The specimen called *latibarbatus,* Paris Museum, is too young to characterize, though adults when obtained may prove it to be specifically distinct.

Macacus silenus var. *alba* Fisch., Syn. Mamm., 1829, p. 28.

Semnopithecus nestor Bennett, Proc. Zool. Soc. Lond., 1833, p. 67; Less., Spec. Mamm., 1840, p. 60; Waterh., Proc. Zool. Soc. Lond., 1844, p. 1.

Semnopithecus latibarbatus Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 439; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; I. Geoff., Cat. Primates, 1851, p. 12; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89; Anders., Res. Zool. Exped. Yunnan, 1878, p. 23.

Presbytis cephaloptera (!) Kelaart, Prodr. Faun. Zeylan., 1852, p. 1.

?*Presbytis albinus* Kelaart, Prodr. Faun. Zeylan., 1852, p. 7.

Semnopithecus cephalopterus (!) Reichenb., Vollständ. Naturg. Affen, 1862, p. 99, fig. 239; Hutton, Proc. Zool. Soc. Lond., 1867, p. 949.

Vetulus nestor Reichenb., Vollständ. Naturg. Affen, 1862, pl. XXII, fig. 326.

?*Semnopithecus thersites* Hutton, Proc. Zool. Soc. Lond., 1867, p. 949.

Semnopithecus kelaarti Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 52.

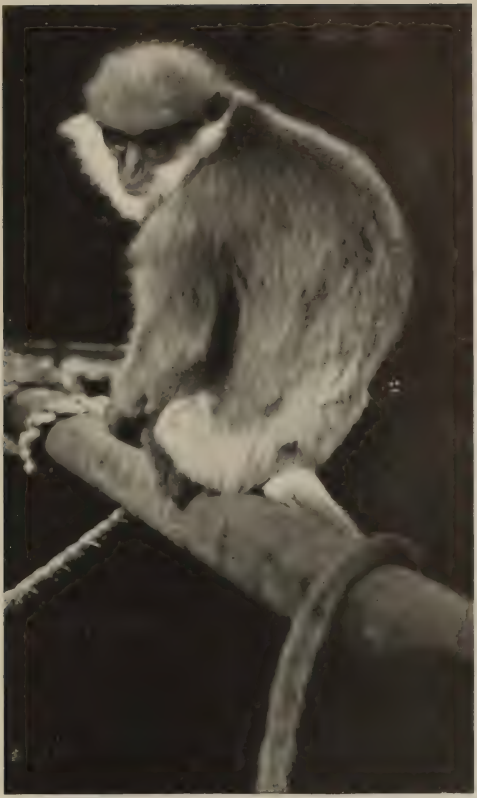
Semnopithecus cephalopterus (!) Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 43.

PURPLE-FACED LANGUR OR WANDEROU.

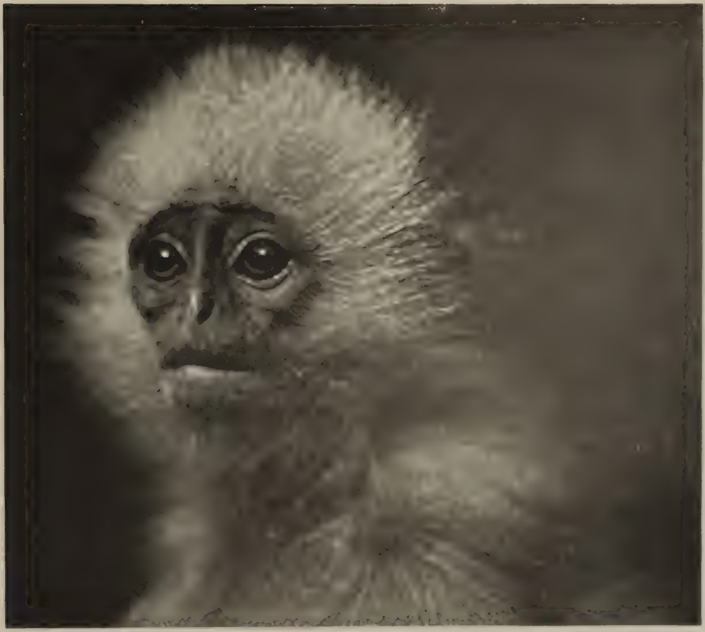
Type locality. Ceylon.

Geogr. Distr. Restricted to the Island of Ceylon.

Color. Male. Black hairs along the line of forehead over eyes; forepart of head Prout's brown grading to Vandyke brown on back of neck; upper parts of body to rump, outer side of thighs and inner side of arms black, speckled on thighs with white; rump pale gray; hands and feet black; hair on sides of face, long, reaching beyond ear; chin, and beneath lower jaw and hairs on upper lip yellowish white; entire under parts black. Face black; tail olive brown. Females are usually brownish and the following description of a young male is from one in the Calcutta Museum. Top of head wood brown; black stripe on side of head from eyes to ears; sides of head, neck and throat yellowish white, hairs on neck long; occiput yellowish brown; upper part of back Prout's brown; shoulders and arms grayish or smoky brown; rump, thighs and tail smoky gray; knees and legs black or blackish brown in front, brownish on sides; hands and feet blackish. No skull. Ex specimen juv. ♂. Calcutta Museum.



Pygathrix cephaloloptera.



Pygathrix entellus.

Measurements. Total length, 1,110; tail, 620; foot, 140, (skin). Skull: *Male,* total length, 99.9.

Female. Top of head, legs and hind neck yellowish brown; upper part, and sides of body and arms to elbow Prout's brown; forearms, and legs below knees bistre; outer side of thighs wood brown; rump pale yellowish brown; whiskers long, extending beyond ears, yellowish brown, as are also chin and throat; under side of body and limbs mars brown; hands and feet mummy brown; tail like rump, pale yellowish brown.

Measurements. Female. Occipito-nasal length, 84.9; intertemporal width, 42.9; breadth of braincase, 54.5; Hensel, 64.5; zygomatic width, 72.3; median length of nasals, 11.2; length of upper canines, 18.2; length of upper molar series, 28.2; length of mandible, 71.2; length of lower molar series, 34.1.

PYGATHRIX CEPHALOLOPTERA MONTICOLA (Kelaart).

Presbytis cephalopterus (!) *monticola* Kelaart, Journ. Roy. Asiat. Soc., (Ceylon branch), II, 1849-50, No. 5, p. 321.

Geogr. Distr. Higher part Kandyan Provinces, Nuwarra Eliya, Ceylon.

Genl. Char. Similar to P. CEPHALOLOPTERA but without white on rump and inside of thighs; larger and darker than its low country relative, and has a rufous tinge on the neck, and with longer and more wavy hair.

Measurements. "Total length, 2 feet, 7½ in; tail 2 ft, 2 in; foot, 6 inches."

"Usually seen in large numbers jumping on the trees, and when disturbed makes a peculiar short howling noise. One was known to have attacked a cooly on a coffee estate carrying a rice bag. The Malabars eat the flesh of this monkey, and consider it very delicious food, and some Europeans who have tasted it, are of the same opinion."

I have not seen examples of this species, and am not aware that there is a specimen in any collection.

PYGATHRIX SENEX (Erxleben). Undeterminable.

Cercopithecus senex Erxl., Syst. Reg. Anim., 1777, p. 24.

?*Presbytis albinus* Kelaart, Prodr. Faun. Zeyl., 1852-54, p. 7; *Id.* Journ. Asiat. Soc. Beng., XX, 1852, p. 182.

Semnopithecus senex Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 53; Blanf., Faun. Brit. Ind., Mamm., 1888-91, p. 35.

Semnopithecus cephalopterus (!) white var., Anders., Zool. Res. Exp. Yunnan, 1878, p. 23, (footnote).

Type locality. Ceylon.

"C. barbatus totus albus" Erxl.

A white monkey from Ceylon was described in the above terms by Erxleben, (l. c.). Blanford (l. c.) describes *P. senex* as follows: "Fur dense and wavy, whiskers full. Long white hairs over the toes."

"Color. Yellowish white, faintly marked with brownish on the head, dusky over the shoulders and on the middle of the back. Face and ears black. Soles and palms flesh-colored."

"Dimensions. Apparently the same as those of *S. ursinus.*

"Distribution. Mountains of Southern Ceylon at considerable elevations."

Blanford does not state from what specimen he took his description, but does say that the only one he had seen was "a young animal in the Leyden Museum which Schlegel says came from Temminck's Collection and was brought from Ceylon at the end of the last century," (1700). His description does not exactly agree with Blanford's. "Sa teinte dominante, d'un blanc jaunâtre, est lavée de brun sur le dos, et de roux sur le dessus de la tête et la nuque." No example from Ceylon answering Erxleben's description is known so far as I am aware, and it was probably an albino of P. URSINA, or P. CEPHALOLOPTERA, or the one described by Kelaart as P. MONTICOLA, but which one of these can never now be known, and therefore *senex* Erxl., being undeterminable must be dropped from the list. Should a third species of PYGATHRIX be discovered in Ceylon, it probably will be ascertained to be the one described by Kelaart as PRESBYTIS MONTICOLA.

PYGATHRIX JOHNI (Fischer).

Simia johni Fisch., Syn. Mamm., 1829, p. 25.

Semnopithecus cucullatus I. Geoff., Bélang., Voy., Zool., 1834, p. 38; *Id.* Compt. Rend., XV, 1842, p. 719; *Id.* Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 541; Less., Spec. Mamm., 1840, p. 59; Müll. und Schleg., Verhandl., 1839-44, p. 59; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 98; V, 1855, p. 26; Schinz, Syn. Mamm., I, 1844, p. 41; I. Geoff., Cat. Primates, 1851, p. 13; *Id.* Archiv. Mus. Hist. Nat., Paris, V, 1852, p. 538; Gerv., Hist. Nat. Mamm., I, 1854, p. 61, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89; Reichenb., Vollständ. Naturg. Affen, 1862, p. 101, fig.; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, XIV.

Semnopithecus johni Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 2nd ed., 1808, p. 5; Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 439; *Id.* Mammif. Anim., 1841, p. 487, (Part.); Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 169; XXVI, 1847, pp. 734, 1272; *Id.* Ann. Mag. Nat. Hist., II, New Ser., 1848, p. 454; Gray, Handb. Mamm. Brit. Mus., 1843, p. 3; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 8; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 45; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 50; Anders., Zool. Res. Exped. Yunnan, 1878, p. 21; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 33; Forbes, Handb. Primates, II, 1894, p. 111.

Semnopithecus jubatus Wagn., Schreb., Säugth. Suppl., I, 1840, p. 305; V, 1855, p. 26; Schinz, Syn. Mamm., I, 1844, p. 41; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 14.

Semnopithecus cephalopterus (!) Blyth, Journ. Asiat. Soc. Beng., XXVIII, 1859, p. 283; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 14.

Semnopithecus (*Kasi*) *cucullatus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 101.

Presbytis jubata Jerd., Mamm. Ind., 1867, p. 7.

Presbytis johni Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 573, Zool. Ser.

NILGIRI LANGUR.

Type locality. "India orientali."

Geogr. Distr. Nilgiri Hills to Travancore, Western Ghats from the Wynaad to Cape Comorin, not lower than 2,500 feet elevation. India.

Genl. Char. Allied to P. CEPHALOLOPTERA but the mandible is narrower and shorter; palate more contracted; supraorbital ridges little developed, teeth larger.

Color. A black line on forehead above eyes, composed of rather stiff hairs standing erect; crown and occiput yellowish, forepart and sides of head yellow strongly tinged with red; hairs of occiput long, those of hind neck reddish; entire upper parts, except rump, outer side of limbs, hands, feet and tail, and under parts of body from throat jet black; rump gray; chin black, throat reddish.

Measurements. Total length, 1,580; tail, 860; foot, 160. Skull: total length, 93.6; occipito-nasal length, 79.5; intertemporal width, 42.8; breadth of braincase, 56.5; Hensel, 59.7; zygomatic width, 67.5;

median length of nasals, 18.4; palatal length, 31.4; length of upper molar series, 27.1; length of mandible, 63.9; length of lower molar series, 31.1.

Blanford says this species is shy and wary, the result of human persecution. It inhabits the sholas or dense but abruptly limited woods of the Nilgiris and other high ranges of Southern India, and is also found in the forests on the slopes of the hills, usually in small troops of from five to ten individuals. It is very noisy, having a loud guttural alarm cry, used also to express anger, and a loud long call. Jordan relates that when the sholas of the Nilgiri range were beaten for game, these monkeys made their way rapidly and with loud cries to the lower portion and thence to a neighboring wood at a lower level. In consequence of the beauty of their skins, and the circumstances that certain castes eat their flesh, these monkeys are more frequently shot than most of the Indian species, hence their shyness.

PYGATHRIX URSINA Blyth.

Presbytis ursina Blyth, Journ. Asiat. Soc. Beng., XX, 1851, p. 155; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 13; Kelaart, Prodr. Faun. Zeylan., 1852, p. 2.

Semnopithecus ursinus Hutton, Proc. Zool. Soc. Lond., 1867, p. 949; Anders., Zool. Res. Exped. Yunnan, 1878, p. 24; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 441; Blanf., Faun. Brit. Ind., Mamm., 1894, p. 36; Forbes, Handb. Primates, II, 1894, p. 122.

Vetulus ursinus Reichenb., Vollständ. Naturg. Affen, 1862, p. 128, not figured.

URSINA LANGUR.

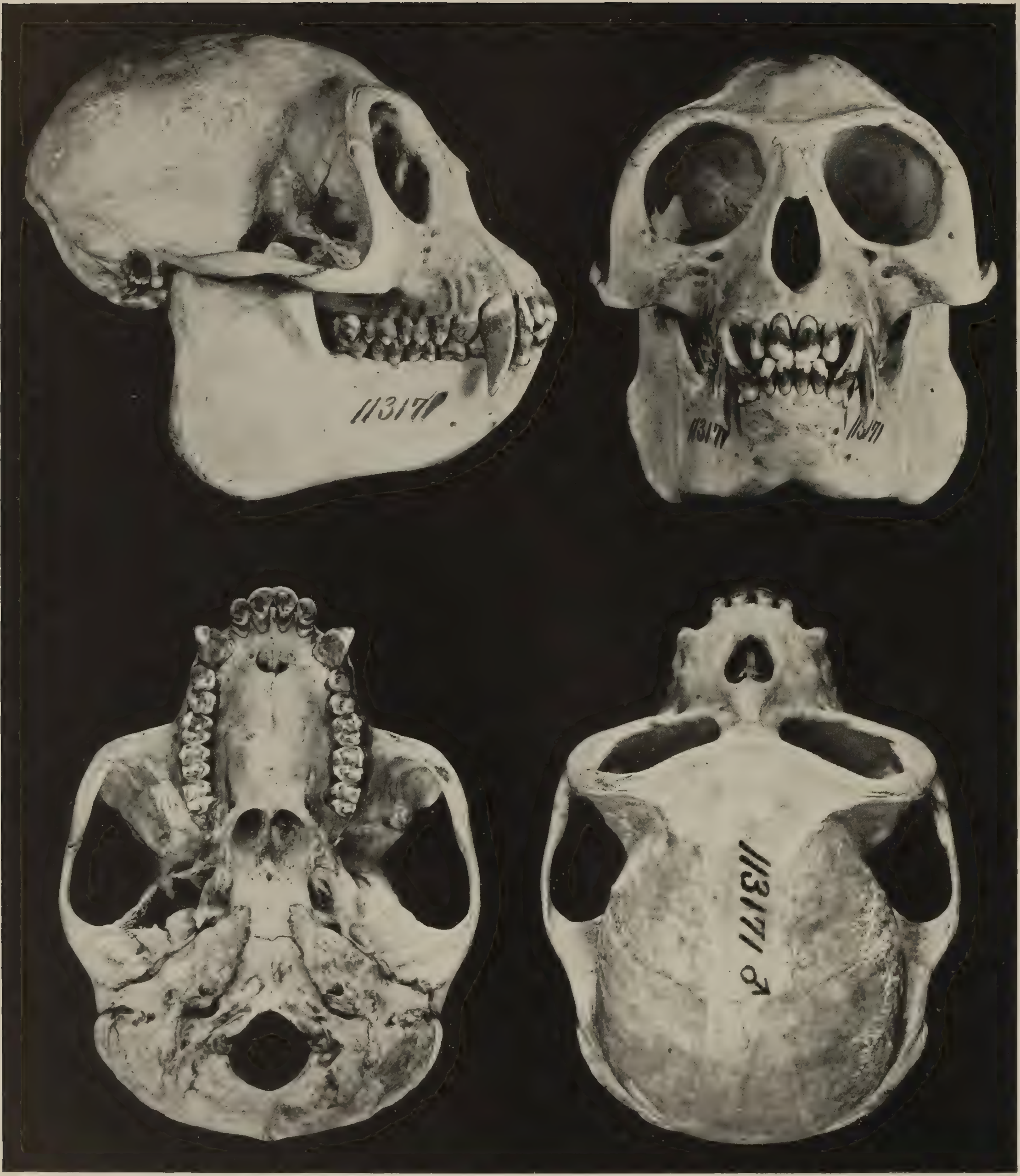
Type locality. Nuwarra Eliya, Ceylon. Type not found in Calcutta Museum.

Geogr. Distr. Mountains of Southern Ceylon, near Nuwarra Eliya.

Genl. Char. Similar to, but larger than P. CEPHALOLOPTERA and P. JOHNI.

Color. Superciliary stripe black, composed mostly of stiff erect hairs; forepart and sides of head dark, slightly reddish brown; nape and hind neck, yellowish brown; rump and base of tail, gray; entire rest of pelage of body, limbs, hands, feet and tail, jet black.

Measurements. Total length, 1,480; tail, 780; foot, 170, (skin).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PYGATHRIX AURATA.

No. 113171 U. S. Nat. Mus. Coll. 4/5 Nat. Size.

This is a very large monkey, a giant by the side of either P. JOHNI or P. CEPHALOLOPTERA, but in color resembling the former almost exactly. It is confined to the mountainous portions of Ceylon.

Kelaart states that this species is "usually seen in large numbers jumping on the trees, and when disturbed make a short howling noise"; while Tennent says that "at early morning, ere the day begins to dawn, their loud and peculiar howl, which consists of quick repetition of the sound *kow-kow,* may be frequently heard in the mountain jungles."

Subgenus Trachypithecus.

I. $\frac{2-2}{2-2}$; C. $\frac{1-1}{1-1}$; P. $\frac{2-2}{2-2}$; M. $\frac{3-3}{3-3} = 32$.

Whiskers long; pelage blackish or silvery gray.

PYGATHRIX AURATA (E. Geoffroy).

La guenon nègre Buff., Hist. Quadr., I, 3me ed., 1793, p. 206.

Cercopithecus maurus (nec Erxleb., nec Schreb.), Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 93; Desm., Nouv. Dict. Hist. Nat., XV, 1817, p. 576; *Id.* Mamm., 1820, p. 55; Kuhl, Beitr. Zool., 1820, p. 12.

Cercopithecus auratus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 93; Desm., Nouv. Dict. Hist. Nat., XV, 1817, p. 576; *Id.* Mamm., 1820, p. 56; Kuhl, Beitr. Zool., 1820, p. 10; Less., Man. Mamm., 1827, p. 35; Temm., Monog. Mamm., I, 1827, p. 14; Griff., Anim. Kingd., V, 1829, p. 11.

Semnopithecus pyrrhus Horsf., Zool. Resch., Java, 1820, pl. ♀; *Id.* Cat. Mamm. Mus. E. Ind. Co., 1838, p. 5; Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 438; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 94; Less., Spec. Mamm., 1840, p. 64; I. Geoff., Cat. Primates, 1851, p. 15; Reichenb., Vollständ. Naturg. Affen, 1862, p. 91, fig. 216.

Simia aurata F. Cuv., Dict. Scien. Nat., XX, 1821, p. 34.

Semnopithecus maurus (nec Schreb.), F. Cuv., Hist. Nat. Mamm., 1822, pl. XII; Horsf., Zool. Resch., Java, 1824, pl.; Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; Less., Man. Mamm., 1827, p. 40; *Id.* Compl. Buff., IV, 1828-30, p. 30; Griff., Anim. Kingd., V, 1827, p. 9; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 4, 8me Leçon; G. Cuv., Règn. Anim., I, Nouv. ed., 1829, p. 94; Fisch., Syn. Mamm., 1829, p. 15, (Part.); I. Geoff., Bélang., Voy., Zool., 1832, p. 42; Schleg., Essai Phys. Serp., Pt. Gen., 1837, p. 237; Waterh., Cat. Mamm.

Mus. Zool. Soc. Lond., 1838, p. 5; Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 436; *Id.* Mammif. Anim., 1841, p. 478; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 23; Less., Spec. Mamm., 1840, p. 63; Müll. und Schleg., Verhandl., 1839-44, pp. 61, 76, tab. 12 bis; Schinz, Syn. Mamm., II, 1844, p. 39; I. Geoff., Cat. Primates, 1851, p. 14; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 9; Jacq. et Pucher., Voy. Pole Sud, III, 1853, p. 22; Gerv., Hist. Nat. Mamm., I, 1854, p. 62, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 15; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 54; Anders., Zool. Res. Exped. Yunnan, 1878, p. 27; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 47; Forbes, Handb. Primates, II, 1894, p. 125, (Part.); Flow., Proc. Zool. Soc. Lond., 1900, p. 319.

Semnopithecus auratus Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; Fisch., Syn. Mamm., 1829, p. 15; Less., Compl. Œuvr. Buff., 1828-30, III, p. 18; Geoff., Bélang., Voy., Zool., 1834, p. 44; Schleg., Ess. Phys. Serp., Pt. Gen., 1837, p. 237; Martin, Charlesw., Mag. Nat. Hist., II, New Ser., 1838, p. 439; Less., Spec. Mamm., 1840, p. 63; Martin, Mammif. Anim., 1841, p. 474, pl. (Part.); I. Geoff., Cat. Primates, 1851, p. 15; Gerv., Hist. Nat. Mamm., I, 1854, p. 62; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 88, 90; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 22; Reichenb., Vollständ. Naturg. Affen, 1862, p. 90, fig. 233; Blyth, Journ. Asiat. Soc. Beng., LXVI, 1875, p. 10; Anders., Zool. Exped. Yunnan, 1878, p. 32.

Simia ceylonica Desmoul., Dict. Class. d'Hist. Nat., VII, 1825, p. 572.

Semnopithecus edwardsi Fisch., Syn. Mamm., 1829, p. 15.

Presbytis pyrrhus Gray, Handb. Mamm. Brit. Mus., 1843, p. 3; Blyth, Journ. Asiat. Soc. Beng., XLIV, 1875, p. 10, ext. no. ♀.

Presbytis maura Gray, Handb. Mamm. Brit. Mus., 1843, p. 3.

Presbytis maurus (!) Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 735; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 13.

Presbytis pyrrha Thos. and Wrought., Proc. Zool. Soc. Lond., 1909, p. 372.

NEGRO LANGUR.

Type locality. Java. Type of *C.* AURATUS Geoff., in Paris Museum.

Geogr. Distr. Bencoolen, the Lampongs, Java.

Genl. Char. Hair of head radiating from a center, long; whiskers bushy passing behind ears.

Color. Adult, top of head, body above and on sides, limbs and tail, and under parts of body, jet black; the thighs, limbs and rump, and sometimes other parts of the body in an old individual, speckled with white. Head, upper part and sides of body, shoulders and thighs bright cinnamon rufous, arms, hands and feet tawny ochraceous; legs between knees and ankles, ochraceous, grading into ochraceous buff at ankle. Description from specimen in Calcutta Museum labelled *S. pyrrhus*. No locality and no skull. Probably young adult of the Javan species.

Measurements. Total length, 1,275; tail, 755; foot, 160, (skin). Skull: total length, 98; occipito-nasal length, 81.4; intertemporal width, 42.2; Hensel, 69.5; zygomatic width, 75.4; breadth of braincase, 54.2; median length of nasals, 12; palatal length, 31.6; length of upper molar series, 27.2; length of mandible, 73.1; length of lower molar series, 34.8.

Color. Female. Black patch on each knee; entire rest of pelage, head, body and limbs golden yellow, reddish golden on back; tail golden yellow, interspersed with black at intervals. Ex type Paris Museum of *C.* AURATUS E. Geoffroy.

The adult of this species is jet black, the newly born yellow, which color is usually soon lost for that of the adult. The type of *Cercopithecus* AURATUS E. Geoffroy, or an example so labelled, is in the Paris Museum, and is without doubt a female of this species, having retained the color of pelage of the young, which, although a rare occurrence does sometimes happen, as is stated by Mr. Shortridge, the British Museum Collector, who sent several females from Java in the pelage of *C.* AURATUS. Geoffroy's type is a female, its locality unknown. This Javan species has usually been known as *Simia maura* Schreber, and supposed to be founded, as asserted by Messrs. Thomas and Wroughton (l. c.) upon the middle sized Black Monkey of Edwards in his Gleanings of Natural History. It is a fact that Schreber cites Edwards in his synonymy, but the description of his "Morhaffe" has nothing whatever to do with Edwards' Black Monkey, and is not founded upon it. Schreber had a baby *yellowish brown* monkey, seven inches long, in spirits, as he states, and this was the type of his *S. maura*. It is difficult to explain why Schreber connected his little brown monkey with Edwards' black one, for he nowhere indicates that he knew that any species of black monkey had brown or red young, and he had no knowledge of the locality of his species as he quotes *Guiana,* as given by Edwards for the habitat.

It is clearly impossible, therefore, to prove that Schreber's specimen was a PYGATHRIX, or to connect this seven inch brownish red example with the black monkey of Java, or in fact with any species known, and it can only be regarded as indeterminable, and *Simia maura* Schreber, must be dropped from the list of the Primates.

Now the question arises what is the name for the Javan black Monkey? Messrs. Thomas and Wroughton decide that it should be *pyrrha* Horsfield, described from a female that had retained the reddish color of the young, never having assumed the black pelage of the adult, and reject AURATA previously given by E. Geoffroy, also to a red female, which had not assumed the adult coloration, because, they "do not think the evidence for the identification of Geoffroy's *C.* AURATUS with this monkey is sufficient to justify the use of his name." The knowledge which these Authors had of Geoffroy's type appears to have been derived from his description only, and which, unfortunately in the majority of cases, is all that Authors usually have to assist them in reaching a decision. But the TYPE of P. AURATA still remains in the Paris Museum, and resembles so closely red females sent by Mr. Shortridge from Java to the British Museum, that there can be no hesitation in ascribing it to the same species. Geoffroy's type is a female, its locality unknown, but the black hairs intermingled with the golden yellow ones of the tail is a strong indication of its affinity to the Javan black PYGATHRIX.

Geoffroy described previously on the same page the Javan species as *Cercopithecus maurus;* the adult as black; and the first and second ages as more or less red. There would be no question what name the species should properly bear if it were not for the doubt as to what was the animal Erxleben and Schreber called *maurus.* If it was a PYGATHRIX, and not this species, it would invalidate the name for the present genus, but as it can never now be determined what species *maurus,* as employed by Erxleben and Schreber, really represented, it is better to drop the name and take that of AURATA, although the latter is misleading as regards the color of the adult. Geoffroy's type is without a doubt a red female of the black Javan PYGATHRIX and is the same as *pyrrhus* Hodgson, and the name AURATA has priority.

PYGATHRIX CRISTATA (Raffles).

Simia cristatus (!) Raffles, Trans. Linn. Soc. Lond., XIII, 1822, p. 245.

Semnopithecus pruinosus Desm., Mamm., 1823, Suppl., 533, no white hairs, spec. Paris Mus.; Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 569; Griff., Anim. Kingd., V, 1827, p. 10; Less., Man. Mamm., 1827, p. 41; I. Geoff., Bélang., Voy., Zool., 1834, p. 4; Waterh., Cat. Mus. Zool. Soc. Lond., 1838, p. 5; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 92; V, 1855, p. 24; Less., Spec. Mamm., 1840, p. 62; Gerv., Hist. Nat. Mamm., I, 1854, p. 62, fig.; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 58; Jent., Notes Leyd. Mus., XI, 1889, p. 215, pl. IX; XIII, 1891, p. 209.

Semnopithecus cristatus Müll., Tijdschrift Natuur. Geschied., II, 1835, p. 316; Schleg., Essai Phys. Serp., Pt. Gen., 1837, p. 237; Martin, Charlesw., Mag. Nat. Hist., New Ser., II, 1838, p. 435; *Id.* Mammif. Anim., 1841, p. 476; Gray, Handb. Mamm. Brit. Mus., 1843, p. 3; Müll. und Schleg., Verhandl., 1839-44, pp. 61, 77, tab. 12, fig. 1, juv.; Schinz, Syn. Mamm., I, 1844, p. 39; Cantor, Journ. Asiat. Soc. Beng., XVI, 1846, p. 175; I. Geoff., Cat. Primates, 1851, p. 4; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, pp. 13, 14; Jacq. et Pucher., Voy. Pole Sud, III, 1853, p. 22, pls. III, IV; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 15; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 54; Anders., Zool. Res. Exped. Yunnan, 1878, p. 27; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, Pt. I, p. 50; Hose, Mamm. Borneo, 1893, p. 15.

Semnopithecus (*Trachypithecus*) *pruinosus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 89, pl. XV, figs. 198, 199.

Semnopithecus (*Trachypithecus*) *cristatus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 89, pl. XV, figs. 200, 203.

Semnopithecus maurus Forbes, Handb. Primates, II, 1894, p. 125. (Part.).

Semnopithecus routledgii Anders., Exp. Yunnan, Zool., 1878, p. 38.

Pygathrix cristata Lyon, U. S. Nat. Mus., XL, 1911, p. 140.

Type locality. Island of Sumatra.

Geogr. Distr. Island of Sumatra.

Color. General color of head, body and limbs black the hairs broadly tipped with white, and this color is conspicuous over all the animal, so that it appears gray with a black ground, the gray becoming more extensive on the rump and legs to the ankles where it is the prevailing color, the black beneath scarcely appearing; arms above elbows like back; forearms with more black showing through the gray; hands and feet entirely black. Tail, black above, pale beneath; under parts yellowish white. Forehead and cheeks black. Ex specimen Calcutta Museum.

Measurements. Total length, 1,240; tail, 730; foot, 150. Skull: total length, 103; occipito-nasal length, 88.8; intertemporal width, 43.5; breadth of braincase, 55.3; Hensel, 72.5; zygomatic width, 78.7; median length of nasals, 12; length of upper molar series, 26; length of mandible, 71.6; length of lower molar series, 32.1.

In general appearance this is a silvery gray animal with black showing more or less distinctly on various parts of the body.

This species has usually gone under the name of *pruinosus* Desmarest, published in the Supplement to his Mammalogie in 1822. But in his synonymy of P. MELALOPHUS (!) he cites the volume of the Transactions of the Linnæan Society in which Raffles had described this species as CRISTATUS, therefore he must have seen Raffles' paper before this Supplement was published, and his name of *pruinosus* would naturally become a synonym of CRISTATUS. Anderson, (l. c.) describes a female from an unknown locality as *Semnopithecus routledgi.* He gives no information as to the place or Institution in which he deposited his examples, and I was unable to find it in the Calcutta Museum. It is probably the same as P. CRISTATA.

PYGATHRIX CRISTATA PULLATA (Thomas and Wroughton).

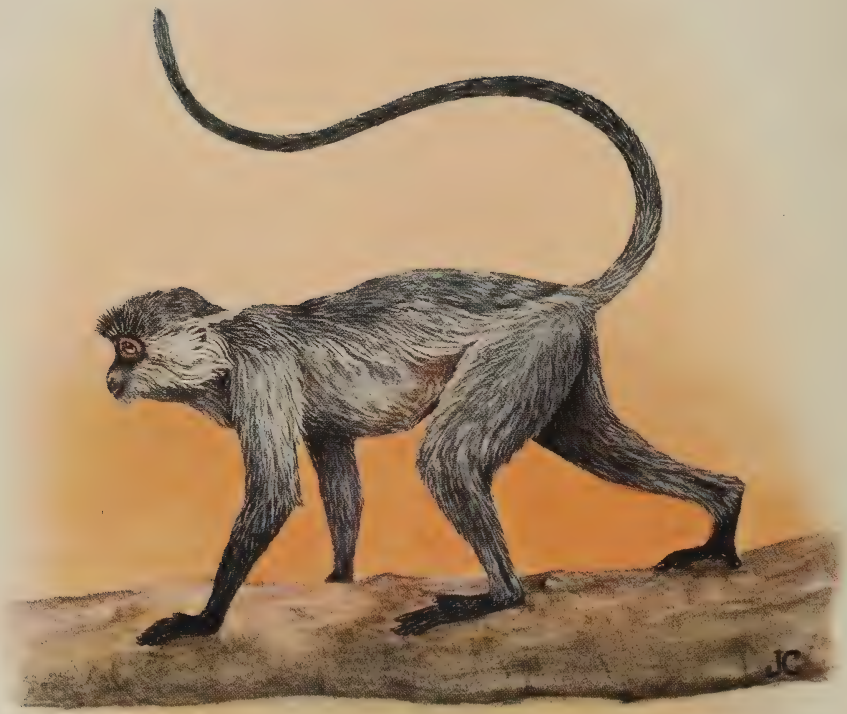
Presbytis cristata pullata Thos. and Wrought., Ann. Mag. Nat. Hist., III, 8th Ser., 1909, p. 439.

Type locality. Battam Island. Type in British Museum.

Geogr. Distr. Islands of Bintang, Battam, Sugi, Jombol, Sebang, Linga, Rhio Archipelago; and Banka Island.

Genl. Char. Much darker than P. CRISTATA, some examples almost entirely black.

Color. General color of head and body above, limbs, hands and feet, black, hairs tipped with silvery white; a silvery white line on side of head above ears to occiput; under parts grayish black, hairs being black and broadly tipped with gray on under side of body and legs; tail above jet black with gray hairs intermingled, beneath grayer, the gray hairs more abundant especially at base. Whiskers long. Ex type British Museum.



PYGATHRIX MARGARITA ELLIOT

Measurements. Total length, 1,240; tail, 740; foot, 150. Skull: total length, 92.9; occipito-nasal length, 79.6; intertemporal width, 44.4; breadth of braincase, 51; Hensel, 26.9; zygomatic width, 69; median length of nasals, 11.1; length of upper canines, 14.8; length of upper molar series, 25.4; length of mandible, 62.2; length of lower molar series, 29.9.*

There are specimens of this race in the British Museum from both Battam and Bintang Islands. It differs from P. CRISTATA in being of a much darker hue, and in not having so much of the silvery white speckling throughout the pelage. In general size the two forms are about the same.

PYGATHRIX ULTIMA (Elliot).

Presbytis ultima Elliot, Proc. U. S. Nat. Mus., XXXVIII, 1910, p. 351.

Type locality. Mount Dulit, Borneo. Elevation 3,000 feet. Type in United States National Museum.

Genl. Char. Similar in color to P. CRISTATA but cranial characters very different. The skull compared with that of P. CRISTATA, two adult males, is generally larger; rostrum and also the braincase longer and narrower; septum broader; tooth row almost straight, (curved in P. CRISTATA); teeth larger and tooth row longer; pterygoid fossa longer and pterygoids not so widely flaring; bullæ much less inflated, in fact compressed and flattened; palate longer and narrower; the lower edge of the mandibular angle is much more rounded, and the lateral pit of the ascending ramus is shallower.

Color. Like P. CRISTATA but averaging slightly darker.

Measurements. Total length, 1,370; tail, 820, (skin). Skull: total length, 104.2; occipito-nasal length, 87; Hensel, 75.3; zygomatic width, 77; intertemporal width, 42.5; palatal length, 38.9; width, 19.4; median length of nasals, 15.1; length of upper molar series, 39; length of mandible, 75.7; length of lower molar series, 36.5. Ex type in United States National Museum.

PYGATHRIX MARGARITA (Elliot).

Presbytis margarita Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 271.

Type locality. Lang Bian, Annam. Type in British Museum.

Color. Forehead covered by long, stiff, erect, black hairs;

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*The type of this race being a female, the measurements have been taken from a skull of a male.

whiskers directed backward, long, extending far beyond ears, grayish white; space around eyes pale, apparently flesh color in life, rest of face black, with a line of white hairs on upper lip; a bar of silvery white hairs goes from each side of the head from above and behind ears to the occiput, where they meet and form a point at the nape; top of head, entire upper part of body, outer side of arms to elbows, and legs from hips to ankles, except front edge about knees which is black, bright bluish silvery gray, the hairs being bluish gray from the root, and tipped with silvery white; forearms, hands and feet jet black; chin, throat, under parts of body, and inner side of arms and legs sparsely covered with white hairs; flanks paler silvery gray than the upper parts; tail above jet black, slightly speckled with white, beneath silvery gray. Ex type British Museum.

Measurements. Total length, 1,315; tail, 775; foot, 127, (skin). Skull: total length, 91.6; occipito-nasal length, 77.9; intertemporal width, 40.1; width of braincase, 52.4; Hensel, 56; zygomatic width, 61.5; median length of nasals, 11.6; palatal length, 28.6; length of upper molar series, 27.7; length of mandible, 61.4; length of lower molar series, 32.3. Ex type British Museum, young adult male.

This is a very handsome monkey with its brilliant pearl gray shining pelage, quite different from any other species of the genus. The coloring varies greatly according to the light which at certain times casts shadows on the gray that are almost black in their intensity. The unique type was obtained in Annam by Doctor Vassal.

PYGATHRIX GERMAINI (A. Milne-Edwards).

Semnopithecus germaini A. Milne-Edwards, Bull. Soc. Philom., 1876, Feb. 12; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 34; Anders., Zool. Res. Exped. Yunnan, 1877, p. 27; Forbes, Handb. Primates, II, 1894, p. 124; Flower, Proc. Zool. Soc. Lond., 1900, p. 319.

GERMAIN'S LANGUR.

Type locality. Cochin China.

Geogr. Distr. Cochin China, Siam.

Genl. Char. General color pale silvery gray. Two specimens are in the Paris Museum slightly different in color, and the hair on head of different arrangement. One, the lighter in hue, has the hairs on forehead upright and falling off to either side, but not over the face, no occipital crest; the other, the darker specimen, has hairs on forehead upright, and inclining backward, and a central occipital crest inclined backward. The arrangement of the hair on the head is quite different, and renders doubtful the value of characters depending upon any peculiar set of such hairs, as they are so easily distorted both in skins and mounted specimens. Hairs on side of head very long passing far beyond ears; and hairs on flanks long falling below line of body in light specimen; tail very long, slender.

Color. Face black; hairs on forehead black; top of head, neck, upper parts of body and flanks, arms to elbows, and hind limbs to ankles brownish gray, silvery gray in certain lights, darkest on dorsal region; long hairs on side of head, silvery brown; forearms, hands and feet black; under parts silvery gray; tail iron gray, hairs tipped with silvery white; tip blackish.

The darker specimen has the forehead blackish brown; top of head and dorsal region blackish brown, hairs tipped with silvery white; flanks pale brown; front of shoulders and arms above elbows, and forearms black, hairs tipped with white, giving a grayish aspect to forearms; middle of shoulders brownish gray; hind limbs to ankles brownish gray; hands and feet black; throat and under parts and inner side of limbs yellowish white; long hairs on sides of head yellowish brown; tail blackish brown.

It will thus be seen that one specimen is much darker than the other, more dark brown than silvery brown. Both are marked types!

Measurements. Total length, 1,074.6; tail, 641.2; foot, 139.7. Skull: total length, 103; occipito-nasal length, 83; Hensel, 74; intertemporal width, 41; zygomatic width, 76; palatal length, 39; breadth of braincase, 55; median length of nasals, 13; length of upper molar series, 27; length of mandible, 73; length of lower molar series, 34. Ex type Paris Museum. Specimen marked "Type."

Flower states, (l. c.) "when on the Bangpakong River in Siam in March, 1897, we from time to time saw flocks of from 10 to 20 monkeys of this species in high trees in patches of jungle. The skin of the face is entirely black, the iris dark brown. A male I shot near Tahkamen measured:—Head and body 23½ in. (or 587 mm.); tail with end hair 33 in. (or 838 mm.); without end hair 31½ in. (or 800 mm.)"

"On April 1st, 1897, I bought from a Siamese at Tahkamen a young monkey apparently of this species; it was evidently very young and was weak and feeble. We tried feeding it at first with a bit of cotton wool soaked in tinned milk and water (fresh milk was not to be had), but soon a young Siamese woman offered to suckle it, and she fed it with her own milk till we left Tahkamen on the 5th April;

then we had to feed the monkey on tinned milk and mashed bananas. It throve very well; in a few weeks it could feed itself on a mess of bananas, rice, porridge and milk, and when we had it about six weeks it took to eating a little grass on the lawn every day. It grew stronger and very active and was very fond of us, (although it screamed at strangers and would not be touched by them); it also enjoyed romps with a Siamese kitten, and the two little animals would sleep curled up together—the monkey grasping the kitten's fur in its hands. When playing about and extra pleased, this monkey had a comic little habit of jumping in the air vertically and coming down again on all fours. Its sense of sight and hearing were particularly acute, and it would follow my wife or myself about the house or compound. For two months this little animal was as well, happy and active as could be; then it got a sudden attack of diarrhæa and a bad cold in the head, and in spite of careful nursing died on June 4th, 1897. *Color.* Fur bright gold all over, except the long hair on the forehead which is dark gray, and the hands and feet which are also dark gray, and the hairs on the cheeks and chin which are white. Skin of face and ears dark brown. The skin of the abdomen and inner side of limbs is white, sparsely covered with golden fur. The hair of the crown does not radiate, but is directed backwards, forming a pointed crest over the occiput. Black supra-orbital hairs well developed, whiskers long, beard short."

PYGATHRIX CREPUSCULA (Elliot).

Presbytis crepuscula Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 271.

Type locality. Muleyit, British Burma. Altitude 5,000 feet. Type in British Museum.

Genl. Char. Hair on head long, but no elevated crest, color pale, tail long. Stiff hairs above eyes erect in the center, standing out at right angles on side.

Color. Eyelids and upper lip, flesh color; forehead and temples black; rest of head above, nape and hind neck, shoulders and arms to elbows on outer side, entire upper part of body and flanks drab gray, palest on dorsal line and darkest on flanks where in certain lights the hair becomes a drab without the gray tint, varying, however, according as the light falls upon it; forearms, in the type a very old male, on the outer side dark grayish brown, on inner edge the arms covered with russet hairs that extend downward over the hands, faded from the original black; outer side of thighs and legs to ankles buffy gray; outer edge yellowish brown going below knee, hands brownish black; feet brownish black but overlaid with russet hairs; space above eye and eyelids, and upper lip flesh color, probably orange yellow in life; face black covered with short black hairs; whiskers long extending beyond ears black, grading into drab gray towards tip; chin whitish; inner side of arms olive gray, tinged with buff; under part of body grayish white tinged with buff; tail above brownish olive gray, beneath olive gray. Ex type British Museum.

Measurements. Total length, 1,160; tail, 620; foot, 160. Skull: type, occipital region gone; intertemporal width, 46.2; zygomatic width, 81.4; breadth of braincase, 60; length of nasals, 11.5; palatal length, 32.7; length of upper molar series, 27.1; length of upper canines, 19.4; length of mandible, 75; length of lower molar series, 33.7. Ex type British Museum.

The two specimens in the British Museum, both males, are from the same locality, and the type, a very old individual, is the only one having russet hairs on any part of the arms or body. The other male is a beautiful drab gray above and on the limbs, with hands and feet brownish black, this color extending slightly on outer side of forearms above wrist; the tail is silver gray with a slight olive tinge. I attribute the russet hairs seen on the type to age. It is a very handsome species in its attractive Quaker dress.

PYGATHRIX CREPUSCULA WROUGHTONI (Elliot).

Presbytis crepuscula wroughtoni Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 272.

Type locality. Pachebon, Siam, (Mouhot). Type in British Museum.

Genl. Char. Forehead and temples not black; hands and feet jet black; upper parts generally paler than P. CREPUSCULA, more silvery.

Color. Space above eyes and lips flesh color, rest of face blackish brown; a line of stiff, black, erect hairs above eyes; top and sides of head, wood brown; whiskers reaching beyond ears, wood brown; hind neck and upper parts of body and arms to elbows, silvery drab gray, varying in depth of shade according as the light falls upon it, but always paler, and of a different hue from P. CREPUSCULA; forearms brownish gray, grading almost into blackish brown, on hands speckled with whitish from tips of hairs; legs a paler silvery drab gray than back, the outer edge over knees brownish; feet blackish brown; tail silvery gray on basal half grading into brownish gray for the remaining portion to tip; chin, throat and abdomen white; rest of under parts, chest and inner side of limbs dark drab gray. Ex type British Museum.

Measurements. Total length, 1,250; tail, 800; foot, 150, (skin). Skull: Total length, 90; occipito-nasal length, 88.5; intertemporal width, 42.8; breadth of braincase, 55.7; Hensel, 59.6; zygomatic width, 67.2; median length of nasals, 10.2; palatal length, 25.7; length of upper molar series, 25; length of upper canines, 15.3; length of mandible, 65.5; length of lower molar series, 31.1. Ex type British Museum.

This species resembles P. CREPUSCULA but is easily recognized by its brown head and blackish brown hands and feet, and the lighter more silvery hue of the fur.

Subgenus Semnopithecus.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

Size large; crest small or absent; pelage plain or varied in color.

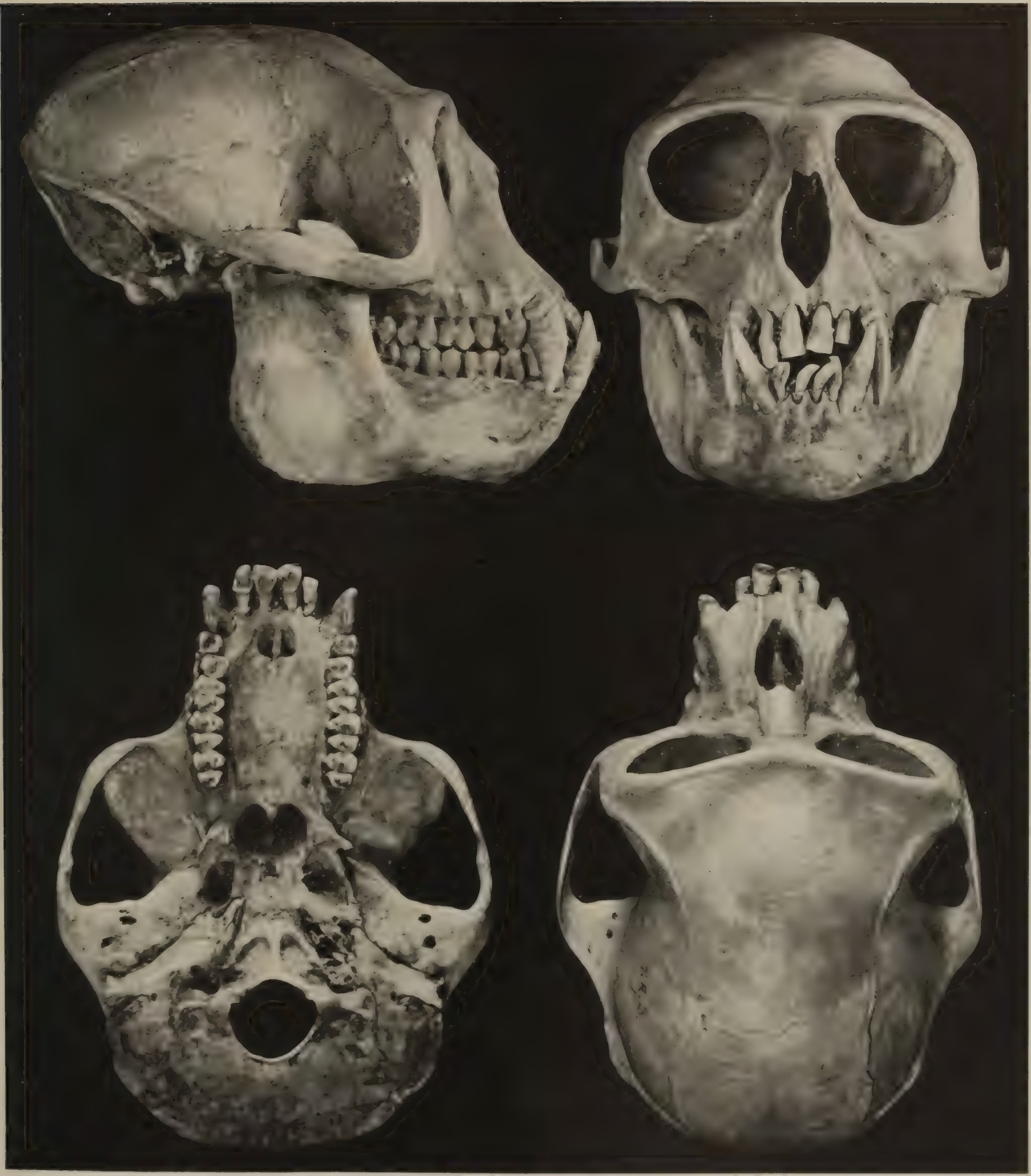
PYGATHRIX ENTELLUS (Dufrèsne).

L'Entelle Audeb., Hist. Nat. Singes et Makis, 1797, Fam. IV, Sec. II, fig. 2.

Simia entellus Dufrès., Bull. Soc. Philom., I, 1797, p. 49; *Id.* Mag. Encyclop., IV, 1797; F. Cuv., Dict. Scien. Nat., XX, 1821, p. 33.

Cercopithecus entellus Latr., Hist. Nat. Buff., XXXVI, 1809, p. 283; *Id.* Nouv. Dict. Hist. Nat., XV, 1817, p. 581; Kuhl, Beitr. Zool., 1820, p. 12; Desm., Mamm., 1820, p. 59.

Semnopithecus entellus Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 568; Less., Man. Mamm., 1827, p. 40; Griff., Anim. Kingd., V, 1827, p. 10; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 10, 8me Leçon; Cuv., Règ. Anim., I, 1829, p. 94; Fisch., Syn. Mamm., 1829, p. 14; Bennett, Gard. and Menag. Zool. Soc. Lond., I, 1831, p. 81; Sykes, Proc. Zool. Soc. Lond., 1831, p. 199; I. Geoff., Bélang., Voy., Zool., 1834, p. 38; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; Martin, Charlesw., Mag. Nat. Hist., II, 1838, p. 435; *Id.* Mammif. Anim., 1841, p. 461; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 99, pl. XXII B; V, 1855, p. 32; Less., Spec. Mamm., 1840, p. 56; Schinz, Syn. Mamm., I, 1840, p.



PYGATHRIX ENTELLUS.

"T. R. B." Brit. Mus. Coll. ⅓ Nat. Size.

42; Blyth, Journ. Asiat. Soc. Beng., XII, 1843, pp. 169, 172; XIII, 1844, pp. 470, 476; Müll. und Schleg., Verhandl., 1839, pp. 44, 59; I. Geoff., Cat. Primates, 1851, p. 13; *Id.* Archiv. Mus. Hist. Nat., V, 1852, p. 537; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 4; Gerv., Nat. Hist. Mamm., I, 1854, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 87; Adams, Proc. Zool. Soc. Lond., 1858, p. 512; Reichenb., Vollständ. Naturg. Affen, 1862, p. 94, figs. 227-230; Lankest., Quart. Journ. Scien., 1865, p. 562; Hutton, Proc. Zool. Soc. Lond., 1867, p. 944; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14, var. 1; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 60; Anders., Zool. Res. Exped. Yunnan, 1877, p. 15; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 35; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 27; Forbes, Handb. Primates, II, 1894, p. 104.

Semnopithecus albogularis Müll. und Schleg., Verhandl., 1839-44, p. 58.

Presbytis entellus Gray, Handb. Brit. Mus., 1843, p. 4, (Part.); Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 733; *Id.* Ann. Mag. Nat. Hist., XX, 2nd Ser., 1851, p. 313; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 11; Jerd., Mamm. Ind., 1867, p. 4; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 573, Zool. Ser.

Semnopithecus anchises Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, p. 470; XVI, 1847, p. 733; *Id.* Ann. Mag. Nat. Hist., XX, 2nd Ser., 1851, p. 313; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 14; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 32; Reichenb., Vollständ. Naturg. Affen, 1862, p. 94, fig. 230.

THE HOONOOMAUN OR HÁNUMÁN.

Type locality. Bengal. Type in Paris Museum, faded to white.

Geogr. Distr. Southern banks of the rivers Ganges and Jumna; parts of the Gangetic provinces, the Dukhun, and the Carnatic down to the Malabar coasts, (Hutton). Southwestern Bengal, Orissa, Central Provinces, Bombay, Guzerat, Southern Rajputana and part of the Northwest Provinces to Kattywar and probably to Cutch, but not to Sind or the Punjaub, (Blanford).

Color. Top of head, back, arms, legs and tail drab, darkest on the limbs and tail; rest of head and body pale buff yellow; hands and feet, black, as are also the face and eyebrows. Ex specimen in Calcutta Museum.

Measurements. Total length, 1,560; tail, 980; foot, 180. Skull: total length, 118; Hensel, 82; zygomatic width, 92; intertemporal width, 52; palatal length, 48; length of upper molar series, 67; length of mandible, 86; length of lower molar series, 46.

The type in the Paris Museum has faded to a pure white and bears but little resemblance to the animal in life. It is quite useless as a specimen for determining the species, a faint brownish tinge along the dorsal line, and on the right thigh alone indicating that the example ever possessed any color on its pelage.

Although so well known and met with frequently in various parts of India, where it is protected and often worshipped, the range of this monkey is not yet completely known, probably on account of it being confounded by unscientific observers with either P. SCHISTACEUS or P. PRIAMUS according to locality. The ranges given above are from the two most reliable sources and probably cover the distribution of the species in the Indian Peninsula.

The following account of the habits of the Hánumán Monkey is given by Blanford (l. c.):

"Few, if any wild animals, afford better opportunities for observation than the Hánumán Monkey of Northern and Central India. Generally protected, and looked upon as sacred by many of the Hindu inhabitants, it has no fear of man, and may be found in groves near villages, or even in the village trees, as commonly as in the depths of the forest. In many parts of India it is a common occurrence to see these monkeys on the roofs of houses. They frequently pilfer grain from the grain dealer's shops, whilst the damage they inflict on gardens and fields renders them so great a nuisance that the inhabitants of the country, although they will not as a rule kill the monkeys themselves, sometimes beg Europeans to shoot the intruders.

"*S. entellus* feeds on fruit and grain, seed, seed-pods (for instance gram), leaves and young shoots, the last two forming a large portion of its food. Certain vegetable poisons are said to be taken by this monkey with impunity, doses of five and even ten grains of strychnine having been given to one without effect, although the same drug killed *Macacus rhesus* quickly.

"The Hánumán is usually found in smaller or larger communities, composed of individuals of both sexes and all ages, the youngest clinging to their mothers and being carried by them especially when alarmed. An old male is occasionally found solitary, as with many other animals. The story that male and female live in separate troups, though apparently believed by Blyth and quoted by Jerdon, I agree with Hutton in regarding as fictitious, though, as the latter observer justly remarks, females with very young offspring may keep together and temporarily apart from the remainder of the troup to which they belong.

"Away from villages, the high trees on the banks of streams or tanks, and, in parts of Central India, rocky hills are the favorite haunts of these monkeys. They are never found at a great distance from water. Whether on trees, on rocks, or on the ground they are exceedingly active. 'They leap with surprising agility from branch to branch, and when pressed take most astonishing jumps. I have seen them cross from tree to tree, a space 20 to 30 feet wide, with perhaps 40 or 50 feet in descent. They can run on all fours with considerable rapidity, taking long strides or rather bounds' (Jerdon). They leap from rock to rock as readily as from tree to tree. But great as their apparent speed is, McMaster found that on horseback he easily ran down a large male in a very short distance; indeed it is their power of bounding and the remarkable appearance they present whilst leaping, with their long tails turned over their backs, that convey the idea of speed, rather than the actual rapidity of their motions.

"Their voice is loud and often heard, especially in the morning and evening. The two commonest sounds emitted by them are a loud, joyous rather musical call, a kind of whoop, generally uttered when they are bounding from tree to tree, and a harsh guttural note, denoting alarm or anger. The latter is the cry familiar to the tiger hunter, amongst whose best friends is the Hánumán. Safely ensconced in a lofty tree, or jumping from one tree to another as the tiger moves, the monkey by gesture and cry points out the position of his deadly enemy in the bushes or grass beneath, and swears at him heartily. It is marvellous to observe how these monkeys, even in the wildest forests, where human beings are rarely seen, appear to recognize the men as their friends, at least as allies against the tiger. It is a common but erroneous notion of sportsmen that this guttural cry is the sure indication of a tiger or leopard having been seen, whereas the monkey quite as often utters it merely as an expression of surprise. I have heard it caused by the sight of deer running away, and I believe it is frequently due to the monkeys catching sight of men. In confinement the Hánumán is, as Jerdon says, quite sedate and indolent. Older animals are not infrequently morose and savage. None of this group are so docile or so amusing as the *Macaci,* and even in the wild state, the Hánumán appears quieter, less possessed by an insatiable curiosity, less sportive, and also less quarrelsome. His behavior is more in accordance with the extreme gravity of his appearance.

"The female Hánumán is said not infrequently to have twins, although one young at a time is the rule, as throughout the order. The period of gestation does not appear to have been ascertained, nor the age at which these monkeys become adult."

This species often goes in large flocks and evinces no fear whatever of man, caused by the immunity it enjoys from all persecution. The present writer has met old males in the parks of the towns of northern India sedately walking about, inspecting the flower beds, and scrutinizing the people passing by, as if each was an habitué himself of the grounds. Once he went to a large tank a few miles from Ahmenabad, especially to see this monkey, for he had been told that there were large numbers in the vicinity, and he brought with him, his daughter accompanying him, a quantity of grain. Arriving at the tank, no monkeys were visible, and we took our stand near a small grove of trees near the water. Beyond was an open plain on the farther side of which was a forest. The man with us uttered a loud somewhat plaintive call, and after it had been twice or thrice repeated we saw the monkeys come galloping across the plain in a large drove, with their long tails elevated above their backs, leaping and racing at a considerable speed. The females carried their young beneath their bodies, the little ones holding firmly to their mothers' hair with hands and feet. They soon came to where we had taken our position and surrounded us. Monkeys seemed everywhere, and they came close to us and sat down, their little black wizened faces, surrounded by their ridiculous whiskers, with the peaked hair over the forehead, were raised expectantly to ours. Pouring some grain into his hand the writer stooped down and held it out to the one closest to him, when with exceeding gravity and good manners the creature placed one of its hands beneath his and with the other took the grain and commenced to eat, doing this sedately and with perfect composure as if we had been lifelong intimates and were accustomed to visit each other every day. Some of the young ones, too large to be carried by their mothers, were shy, and climbed to the lower branches and watched us, but could not be coaxed to come down and get the grain. There was no crowding or jostling among them, though occasionally two males would indulge in a boxing match during which their hands were employed with much skill, and several resounding whacks were given on the sides of the head. They would grasp the lady's skirt with one hand, as if fearful she might get away, and take the grain from her hand eyeing her intently, all the while. Occasionally one would stealthily approach from the throng and make a sudden grab for the grain, bounding instantly back amid the crowd, but this was rarely attempted. One individual who would not approach near enough to obtain any food, consoled himself by sitting down a short distance away, and taking his feet in his hands rocked himself backward and forward and up and down, and evidently enjoyed himself hugely. Some grain was thrown into their midst, and they immediately became busy picking it up, but very quietly and without any squabbling or fighting about it. After we had disposed of most of the grain we had brought, the rest was scattered upon the ground, and all the monkeys gathered about it in a solemn circle, with their backs rounded and heads sunk between their shoulders, like so many little old men, and we left them busily employed. It was an extraordinary sight, this great gathering of wild monkeys, perfectly behaved, no attempt being made to bite, or, to their visitors, exceeding in any way the bounds of polite society.

Hánumán which means 'long jaw,' was a member of the Monkey Kingdom of Southern India, who aided Rama in his conquest of Ceylon by forming a bridge of rocks opposite Manar.

PYGATHRIX ALBIPES (I. Geoffroy).

Semnopithecus albipes I. Geoff., Cat. Primates, 1851, p. 14; *Id.* Archiv. Mus. Hist. Nat., Paris, V, 1852, p. 536; Gerv., Hist. Nat. Mamm., I, 1854, p. 61; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 34; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 87; Reichenb., Vollständ. Naturg. Affen, 1862, p. 97; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 15; Anders., Zool. Res. Exped. Yunnan, 1878, p. 18.

Type locality. "Manilla, Island of Luzon, Philippine Archipelago." Type in Paris Museum.

Color. Long hairs on forehead black; top of head, neck and entire upper parts, shoulders, arms, and upper edge of thighs reddish or pinkish buff; sides of head and throat yellowish white; tail grayish brown, hairs pale brown tipped with white; limbs, hands, feet, under parts and inner side of limbs grayish white. Ex type in Paris Museum.

The specimen in the Paris Museum, labelled as the type of this form, is a yellowish white animal tinged rather strongly with reddish on upper parts and on arms. There is a central upright occipital crest.

The locality given for this example, "Manille" is doubtless an error, as this genus is not found in the islands of that Archipelago. The type of P. ENTELLUS in the Paris Museum, or the specimen labelled as such, is now pure white, having faded, but whether this example has also faded cannot be ascertained, for Geoffroy described only the hands and feet, the former "gris fauve sale, avec les doigts en partie blancs," and the latter, "blanc sale un peu lavé de jaune." I am inclined to regard P. ALBIPES as an albinistic individual of P. ENTELLUS.

PYGATHRIX SCHISTACEUS (Hodgson).

The Langár Hodgs., Journ. Asiat. Soc. Beng., I, 1832, p. 339.

Semnopithecus entellus Hodgs., Proc. Zool. Soc. Lond., 1834, p. 95, (nec Dufrèsne); Ogilby, Madras Journ. Lit. and Scien., XII, 1840, p. 144.

Semnopithecus schistaceus Hodgs., Journ. Asiat. Soc. Beng., IX, 1840, p. 1212; X, 1841, p. 907; *Id.* Calc. Journ. Nat. Hist., II, 1842, p. 212; IV, 1844, p. 285; *Id.* Ann. Mag. Nat. Hist., 1st Ser., VIII, 1842, p. 314; Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 171; XIII, 1844, pp. 471, 476; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 5; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 33; Horsf., Proc. Zool. Soc. Lond., 1856, p. 393; Adams, Proc. Zool. Soc. Lond., 1858, p. 512; Reichenb., Vollständ. Naturg. Affen, 1862, p. 96, no fig.; Schlagenw., Proc. Asiat. Soc. Beng., 1866, p. 23; Hutton, Proc. Zool. Soc. Lond., 1867, p. 948; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 6; Anders., Zool. Res. Exped. Yunnan, 1873, p. 16; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 3; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 30; Forbes, Handb. Primates, II, 1894, p. 107.

Semnopithecus nepalensis Hodgs., Journ. Asiat. Soc. Beng., IX, 1840, p. 1212; *Id.* Calc. Journ. Nat. Hist., II, 1842, p. 212.

Presbytis entellus (nec Dufrèsne), Gray, Cat. Hodgs. Mamm. Nepal, I, 1846, var. 2; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14.

Presbytis schistaceus (!) Blyth, Ann. Mag. Nat. Hist., XX, 2nd Ser., 1851, p. 313; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 2; Jerd., Mamm. Ind., 1867, p. 6; Blanf., Journ. Asiat. Soc. Beng., XLI, 1872, p. 32.

HIMALAYAN LANGUR.

Type locality. "Terai forest and lower hills, rarely the Kachar also."

Geogr. Distr. Range of the Himalayas, Cashmere to Bhutan.

Genl. Char. Similar to P. ENTELLUS but larger; head paler than the back; ears smaller; feet and limbs of nearly uniform color; nasals project beyond the anterior border of premaxillaries. Hair on head radiating from central point.

Color. Black line across forehead over eyes, top of head wood brown or whitish on frontal half, straw yellow on back and sides of head and on throat; upper parts and sides of body mars brown; under parts grayish; limbs mars brown like back; hands and feet mixed brown and gray; tail like back. Skull in skin. Ex specimen Calcutta Museum from Sikkim.

The skin was not made up, and was very stiff and difficult to handle, especially to get the color of limbs, hands and feet.

Measurements. Total length, 1,520; tail, 820; foot, 200, (skin). Skull, (of another specimen), total length, 143.7; occipito-nasal length, 111.3; intertemporal breadth, 53.5; Hensel, 103.8; zygomatic width, 114.2; breadth of braincase, 75.6; median length of nasals, 12.6; palatal length, 56.5; length of upper molar series, 40; length of mandible, 107.4; length of lower molar series, 50.3; length of upper canines, 24.4.

"Except in inhabiting a much cooler climate, this Langur differs but little from the Hánumán monkey in habits. Hutton has observed it near Simla, sporting amongst fir trees that were loaded with snow wreaths." (Blanford).

PYGATHRIX LANIA (Elliot).

Presbytis lania Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 273.

Type locality. Chumbi, Thibet. Type in British Museum.

Genl. Char. Hair long, thick, woolly, inclined to gather in masses especially on upper back and shoulders. Size large.

Color. Head and hind neck yellowish white; sides of head, pure white; upper parts of back and shoulders, sepia; flanks and upper parts of arms, pale brownish gray; upper parts of legs paler, more silvery gray; hands black; chin, throat, under parts of body and inner side of limbs yellowish white; tail, above like back, paler, more whitish beneath. Ex type British Museum.

Measurements. Size about the same as P. SCHISTACEA. Skull: total length, 125.3; occipito-nasal length, 102.7; intertemporal width, 50.8; breadth of braincase, 73.5; Hensel, 88.3; zygomatic width, 102.5;

median length of nasals, 12; palatal length, 49.3; length of upper molar series, 47.5; length of mandible, 91.5; length of lower molar series, 44.4. Ex type British Museum.

The unique specimen, the type of the species, was received by the British Museum from Chumbi, Thibet. It is a female with the feet and most of the tail wanting. It is chiefly remarkable for its woolly coat, quite unlike the pelage of P. SCHISTACEA. It probably represents a form dwelling among the higher mountains, possibly mainly to the north of the Himalayas, whose coat has been modified to enable the wearer to successfully withstand the low temperature of those regions. The skull is generally larger than one of a female of P. SCHISTACEA; it is broader across the orbits, the orbits themselves are much larger, and the orbital ridges greatly arched; the rostrum is broader at base; the palate is longer and its roof flatter; the orbital ridge is more prominent, the depression at the frontal is much greater, and the braincase broader; unfortunately the posterior portion of the skull of P. SCHISTACEA is wanting and a comparison posterior to the pterygoids cannot be made; the skull of P. LANIA indicates a larger animal, but it is impossible to say whether this is an individual trait or a specific character. There are five lower incisors but this must be regarded as abnormal, although the teeth are in no wise crowded.

PYGATHRIX PILEATA (Blyth).

The Assam Entellus Monkey Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 732.

Semnopithecus pileatus Blyth, Journ. Asiat. Soc. Beng., XII, 1843, p. 174; XIII, 1844, p. 467; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 30, pl. XXVI; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1857, p. 7; Hutton, Proc. Zool. Soc. Lond., 1867, p. 946; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 57; Anders., Zool. Res. Exped. Yunnan, 1877, p. 13; *Id.* Cat. Ind. Mus. Calc., 1881, p. 40; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 37, fig. 9; Forbes, Handb. Primates, II, 1894, p. 103.

Presbytis pileatus (!) Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, pp. 735, 1271, pl. XXVI, fig. 3; XLIV, 1875, p. 2, ext. no.; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 12; *Id.* Mamm. Burma, 1875, p. 10.

Semnopithecus (*Trachypithecus*) *pileatus* Reichenb., Vollständ. Naturg. Affen, 1862, p. 92, not figured.

BONNETED LANGUR.

Type locality. Malay Peninsula? Type not in Calcutta Museum.

Geogr. Distr. Assam and hills to the south of the valley, Sylhet, Tipperah, Chittagong, northern Arakan and part of Upper Burma, (Blanford).

Genl. Char. Allied to P. ENTELLUS but smaller.

Color. Top of head, hair brown; long black hairs on forehead; upper back, hair brown graduating into pale gray, and then into a cream buff on the rump; sides of head tawny, this color extending on to the shoulders, along the edge of the arms and lower sides of body; arms pale yellowish gray, hands blackish brown, under side of body, throat, inner side of arms and legs orange buff; feet dark gray; tail pale gray, graduating into purplish black on apical third. Ex specimen Calcutta Museum.

Measurements. Total length, 1,690; tail, 1,030; foot, 195, (skin). Skull: total length, 116.2; occipito-nasal length, 96.3; intertemporal width, 50.4; width of braincase, 65.5; Hensel, 77.2; zygomatic width, 86.3; median length of nasals, 11; palatal length, 36; length of upper canines, 18.4; length of upper molar series, 30.7; length of mandible, 81.6; length of lower molar series, 39.

In some adult males the upper parts are gray to the tail, no cream buff or any other color showing.

PYGATHRIX HYPOLEUCA (Blyth).

Semnopithecus hypoleucus Blyth, Journ. Asiat. Soc. Beng., X, 1841, p. 839; XII, 1843, p. 170; XIII, 1844, pp. 470, 476; XVI, 1847, pp. 733, 1271, pl. XXVI, fig. 1; *Id.* Ann. Mag. Nat. Hist., XX, 2nd Ser., 1851, p. 313; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 14; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 31; Reichenb., Vollständ. Naturg. Affen, 1862, p. 99, figs. 231, 232; Anders., Zool. Res. Exped. Yunnan, 1877, p. 20; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 40; Blanf., Faun. Brit. Ind., 1891, p. 33; Forbes, Handb. Primates, II, 1894, p. 110.

Semnopithecus johni var. Martin, Mammif. Anim., 1841, p. 489; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 14.

Semnopithecus dussumieri I. Geoff., Compt. Rend., XV, 1842, p. 719; *Id.* Archiv. Mus. Hist. Nat. Paris. II, 1843, p. 538, pl. XXX; V, 1852, p. 537; *Id.* Cat. Primates, 1851, p. 13; Gerv., Hist. Nat. Mamm., 1854, p. 61, pl. IV; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 87, 89; Reichenb., Vollständ. Naturg. Affen, 1862, p. 97, figs. 234, 235; Schleg., Mus. Pays-Bays, Simiæ, 1876, p. 62.

Presbytis hypoleuca Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 733.

Presbytis johni Blyth, Journ. Asiat. Soc. Beng., XXVIII, 1859, p. 283; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 12; Jerd., Mamm. India, 1867, p. 7.

MALABAR LANGUR.

Type locality. Travancore. Type not found in Calcutta Museum.

Geogr. Distr. Malabar coast to Cape Comorin, up to 1,200 feet elevation.

Genl. Char. Similar to P. ENTELLUS, but always darker in the middle of the back than on the sides; no crest, hair on crown radiating from the center.

Color. Head, cream buff, with a narrow black line on border of face; back, shoulders and arms to elbows purplish brown; forearms, hands, legs and feet black; lower part of sides, under parts of body, and sides of thighs, and anal region pale yellowish; tail black; face black. No skull. Ex spec. Calcutta Museum from Travancore.

Anderson gives measurements of the type (l. c.) as follows: premaxillaries to the lambdoidal ridge, 4.26 inches; palate, 1.73; fronto-malar breadth, 2.55; zygomatic width, 3.30 in.; occipital and basioccipital portions of skull wanting. These figures indicate that P. HYPOLEUCA is the smallest of this group of monkeys.

The type of *S. dussumieri* is in the Paris Museum, a female with a young one in her arms, and though faded somewhat on the back, agrees with the description of the specimen in the Calcutta Museum.

The habits of this species do not differ much from those of P. ENTELLUS, and although it is found in trees near houses, according to Blanford, it is not familiar and shuns observation. It has the usual loud call of the genus, and the same kind of alarm note, when it sees tigers or other beasts of prey. It is frequently taken young and tamed.

PYGATHRIX PRIAMUS (Blyth).

Semnopithecus priam Elliot, Mss. Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, pp. 470, 476.

Semnopithecus pallipes Blyth, Ann. Mag. Nat. Hist., 1844, p. 312.

Presbytis priamus Blyth, Journ. Asiat. Soc Beng., XVI, 1847, p. 732, pl. LIV, fig. 1; XX, 1851, p. 313; *Id.* Ann. Mag. Nat. Hist., I, New Ser., 1848, p. 454; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 12; Horsf., Cat. Mamm. Mus. E. Ind.

Co., 1851, p. 5; Kelaart, Prodr. Faun. Zeylan., 1852, p. 3; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 36; Tennent, Nat. Hist. Ceyl., 1861, p. 5, fig. 2; Reichenb., Vollständ. Naturg. Affen, 1862, p. 94, no fig.; Jerd., Mamm. Ind., 1887, p. 7; Anders., Zool. Res. Exped. Yunnan, 1877, p. 18; Forbes, Handb. Primates, II, 1894, p. 108.

Presbytis thersites Blyth, Journ. Asiat. Soc. Beng., XVI, 1847, p. 1271, pl. LIV, fig. 3; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 14; Kelaart, Prodr. Faun. Zeylan., 1852, p. 5; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 34; Tennent, Nat. Hist. Ceylon, 1861, p. 132, pl. fig. 1; Reichenb., Vollständ. Naturg. Affen, 1862, p. 96, no fig.; Hutton, Proc. Zool. Soc. Lond., 1870, p. 15.

Vetulus priamus Reichenb., Vollständ. Naturg. Affen, 1862, p. 128, not figured.

Vetulus thersites Reichenb., Vollständ. Naturg. Affen, 1862, p. 129, not figured.

Semnopithecus priamus Hutton, Proc. Zool. Soc. Lond., 1867, p. 949; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 38.

MADRAS LANGUR.

Type locality. Coromandel Coast. Type not in Calcutta Museum.

Geogr. Distr. India, Coromandel Coast and the Carnatic north to Nellore; the Wynaad, and eastern slope of the Nilgiri Hills to 6,000 feet, and also in Northern Ceylon to the Kandyan Hills in the south.

Genl. Char. Similar to P. ENTELLUS, but head with a slight occipital crest; hands and feet yellowish not black above; facial portion of skull shorter and more concave; nasals short and broad.

Color. Dark brown spot on middle of head, rest of head pale yellow, very long black hairs above eyes; upper part of body and outer side of limbs dark broccoli brown; hands and feet broccoli brown; under parts straw yellow like head; tail similar to back but darker. Ex specimen Calcutta Museum from St. Pedro, Ceylon. Face black? Callosities large.

A very plain species of an almost uniform color on body, and with a pale straw colored head.

Measurements. Skull: total length, 107.4; occipito-nasal length, 88.8; intertemporal width, 48.1; width of braincase, 62.1; Hensel, 71.8; zygomatic width, 85.1; median length of nasals, 10; palatal length, 39.3; length of upper molar series, 32.4; length of upper canines, 21.1; length of mandible, 76.2; length of lower molar series, 35.5.

Specimens from the Coromandel Coast are much grayer than those from Ceylon, these being a vinaceous brown above. Whether these differences in color indicate the existence of a race separable from the typical form, would require more examples than are at present available to determine satisfactorily, and the problem will have to remain for Indian Mammalogists, who are on the ground, to solve.

Blyth described this species as having a high, compressed vertical crest, but Anderson (l. c.) has stated that the crests of specimens in the Calcutta Museum were produced artificially, in one case by cotton wool placed beneath the skin, and in another by a wire, in both cases the result of unskilled taxidermy.

On the other hand Blanford states in a footnote, that in three dried skins from Ceylon in the British Museum, the crest was distinctly shown, and that he had also seen it in skins from Southern India and he was assured by Davison and others that it was constantly present.

The type of *P. thersites* came from Ceylon and agrees with other individuals from that island considered the same as P. PRIAMUS.

Subgenus Pygathrix.

Size large, body robust; limbs of nearly equal length; facial angle 50°.

PYGATHRIX NEMÆUS (Linnæus).

Simia nemæus Linn., Mant. Plant., 1771, p. 521; Schreb., Säugth., I, 1775, p. 110, pl. XXIV; Gmel., Syst. Nat., I, 1788, p. 34; Shaw, Gen. Zool., I, Pt. I, 1800, p. 56; F. Cuv., Dict. Scien. Nat., XX, 1821, p. 32.

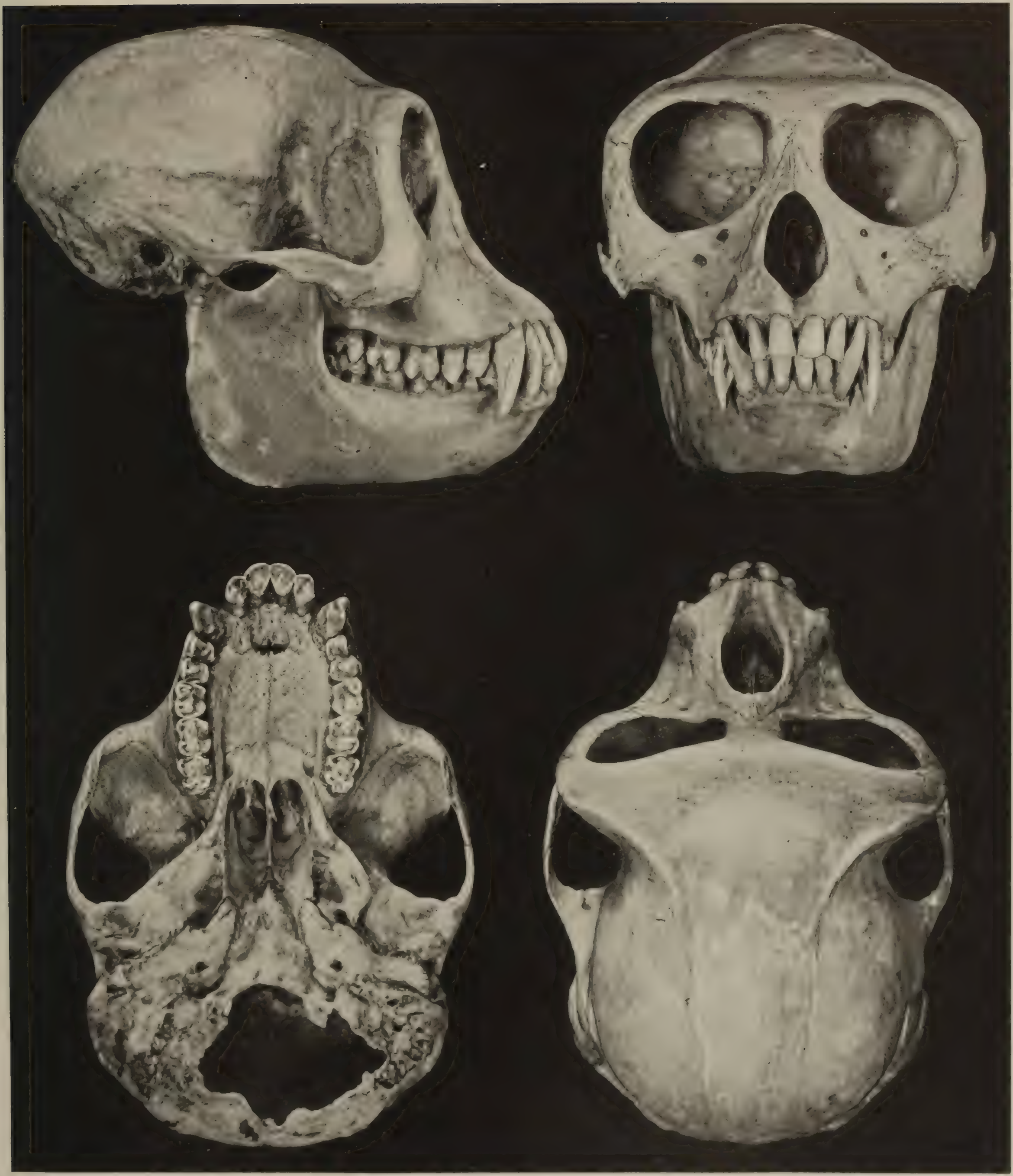
Cercopithecus nemæus Zimmer., Geogr. Gesch., II, 1770, p. 194; Erxl., Syst. Reg. Anim., 1777, p. 42; Bodd., Elench. Anim., 1785, p. 60; Desm., Nouv. Dict. Hist. Nat., XV, 1817, p. 574; Kuhl, Beitr. Zool., 1820, p. 8.

Le douc Audeb., Hist. Nat. Singes et Makis, 1797, IV, Fam. Sec. 1, pl. I.

Pygathrix nemæus Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 90.

Cercopithecus (*Lasiopyga*) *nemæus* Desm., Mamm., 1820, p. 54.

Lasiopyga nemæus Less., Man. Mamm., 1820, p. 39; Griff., Anim. Kingd., V, 1827, p. 8; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 84; Reichenb., Vollständ. Naturg.



PYGATHRIX NIGRIPES.

No. 225 Brit. Mus. Coll. ⅘ Nat. Size.

Affen, p. 123, figs. 314, 316; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 13.

Semnopithecus nemæus F. Cuv., Hist. Nat Mamm., 1825, pl. XIV; Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 9, 8me Leçon; G. Cuv., Règn. Anim., I, 1829, p. 93; Fisch., Syn. Mamm., 1829, p. 13; I. Geoff., Bélang., Voy., Zool., 1834, p. 34; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; Martin, Charlesw., Mag. Nat. Hist., New Ser., I, 1838, p. 434; *Id.* Mammif. Anim., 1841, p. 459; Less., Spec. Mamm., 1840, p. 55; Blainv., Ostéog., 1841, pl. VI; Müll. und Schleg., Verhandl., 1839-44, p. 62; Schinz, Syn. Mamm., I, 1844, p. 43; I. Geoff., Cat. Primates, 1851, p. 12; Gerv., Nat. Hist. Mamm., I, 1856, p. 60, pl. III; A. Milne-Edw., Recher. Mamm., 1868-74, p. 242; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 64; Anders., Zool. Res. Exped. Yunnan, 1878, p. 40; Forbes, Handb. Primates, II, 1894, p. 134.

Presbytis nemæus Blyth, Journ. Asiat. Soc. Beng., XLIV, 1875, ext. no. p. 11.

DOUC LANGUR.

Type locality. Cochin China.

Geogr. Distr. Northern Cochin China; Island of Hainan.

Genl. Char. No crest; forehead low; interorbital space broad.

Color. Forepart of head black; rest of head, neck, upper part of body to rump, flanks and arms to below elbows, iron gray; shoulders, bar across chest, inner side of elbows and thighs black; forearms on outer side, yellowish white; legs maroon; hands and feet black; whiskers and throat white; a broad deep ochraceous rufous collar on chest above the black bar, passes around neck to above the black shoulders; under parts of body yellowish brown speckled with white; rump, anal region, and thighs beneath white; tail white.

Measurements. Total length, 1,230; tail, 610; foot, incomplete, 180.

Mr. O. Thomas in his valuable paper on Linnæan types (l. c.) has followed Gray in placing P. NEMÆUS in a generic rank distinct from all other Langurs. For the present species, Gray chose the term LASIOPYGA, proposed by Illiger in 1811 for NICTITANS and NEMÆUS species of different genera, restricted to NICTITANS by Geoffroy in 1812, who selected NEMÆUS for the type of his genus PYGATHRIX. Gray knew this for he cites PYGATHRIX, but he did not heed the fact that the two species concerned were of different genera. Gray's characters for the genus are trivial and as Mr. Thomas says are based upon external characters and the relative proportions of fore and hind limbs, in themselves quite insufficient for the establishment of a distinct genus. Mr. Thomas practically abandons these, and relies for the establishment of PYGATHRIX upon the position of the basal axis of the braincase which is "set on the facial bones at quite a different angle in the two genera being far more strongly inclined in PYGATHRIX, in which, as a consequence the posterior nares are of enormously greater height."

In regard to the skulls of P. NEMÆUS and P. NIGRIPES, they vary considerably in shape, and although NIGRIPES is the larger animal, its skull is smaller, has a more depressed braincase, having less height, with a short facial angle. Among the Langurs there is no little cranial variation, and if any single character is deemed sufficient for the establishment of a distinct genus, it would probably be necessary to increase materially such prominent divisions, and which, up to the present have been quite sufficiently segregated under subgeneric terms.

There is nothing so vitally important in the cranial difference mentioned by Mr. Thomas as to necessitate a distinct genus for the two species concerned, a difference never referred to by Authors when conferring generic rank on these monkeys, and therefore not considered by them of sufficient importance to be mentioned. The position of the facial bones to the basal axis of the cranium, may possibly be regarded as of sufficient importance to cause the creation of a subgeneric division, if the known species included in it, at present but two, present the same peculiarity in an equal degree, (which these two species do not), but it can hardly be deemed of such extreme importance as to separate the two Langurs from all the rest of their relatives, (with whom they are closely allied in most respects), by a distinct generic rank. Believing that sufficient reasons have not yet been advanced for this fact to be established, *P. nemæus* and *P. nigripes* have been continued in the genus *Pygathrix,* but tentatively in a subgeneric division of the same name. Geoffroy, who proposed (l. c.) the genus PYGATHRIX for *Simia nemæus* gives the facial angle at 50°, the same as his *Cercopithecus,* which includes also various species of PYGATHRIX, such as P. AURATUS, P. ENTELLUS, etc.

PYGATHRIX NIGRIPES (A. Milne-Edwards).

Semnopithecus nigripes A. Milne-Edwards, Nouv. Archiv. Mus. Hist. Nat., Paris, VI, 1871, p. 7; Blyth, Journ. Asiat. Soc. Beng., XLIV, 1875, p. 11; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 32; Anders., Zool. Res. Exped. Yunnan, 1878, p. 41; Forbes, Handb. Primates, II, 1874, p. 135.

BLACK-FOOTED LANGUR.

Type locality. Saigon, Cochin China. Type in Paris Museum.

Geogr. Distr. Saigon, and the borders of the Mékong River near its mouth.

Genl. Char. Similar to P. NEMÆUS but the legs longer, and posterior portion black; skull smaller; braincase more depressed and not so high; facial portion short, no interorbital swelling.

Color. Front of head black, extending in a narrow line to ears, where it joins a black patch covering sides of face in front of ears; a narrow line from above eyes, passing down sides of face in front of black patch to opposite angle of mouth yellowish white; top and back of head, neck and upper part of body to rump, grizzled gray; shoulders, and arms to wrists iron gray, all hairs ringed with black and white; sides of body iron gray; hind limbs, hands and feet black; rump and tail white; chin, throat, and spot on chest, whitish; rufous band from behind ears, down sides of neck and across lower part of throat, beneath which is a black bar from inner side of arms near elbows; under parts iron gray to anal region which is black; inner side of arms black on inner and outer edge on elbow, remainder iron gray; inner side of legs black except inner side of thighs near tail, which is white. Ex type Paris Museum.

Measurements. Male. Total length, 1,490; tail, 670; foot, 180, (skin). Skull: total length, 128.3; occipito-nasal length, 95.3; intertemporal width, 50; breadth of braincase, 60; Hensel, 32.3; zygomatic width, 82; median length of nasals, 13.8; length of upper canines, 19.5; length of upper molar series, 29.2; length of mandible, 73.3; length of lower molar series, 35.3.

GENUS II. RHINOPITHECUS. RETROUSSÉ-NOSED LANGURS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

RHINOPITHECUS A. Milne-Edw., Recherch. Mamm., 1872, p. 233, pls. XXXVI, XXXVII. Type *Rhinopithecus roxellanæ* A. Milne-Edwards.

Nasal portion of face depressed; end of nose turned upward; thick ruff surrounds face; humerus longer than radius.

But four species of this genus are known, all of large size, and of striking coloration. They are inhabitants of northwestern China, Tonkin and eastern Thibet, rare in collections, and of their habits nothing is known. Two of the species, R. ROXELLANÆ and R. BIETI were described by A. Milne-Edwards in 1870 and 1898 respectively, and the third R. BRELICHI by O. Thomas in 1903, and the fourth, R. AVUNCULUS by G. Dollman in the present year. The geographical range of all the species is but imperfectly known.

KEY TO THE SPECIES.

A. Nose small, upturned, depressed in center; tail long.
  a. No white patch between shoulders.
    a.' Pelage orange, rufous, and grayish black. . .*R. roxellanæ.*
    b.' Pelage black, brown and white . . . . *R. bieti.*
  b. With white patch between shoulders . . . . *R. brelichi.*
  c. Patch on each side of tail at root above . . . . *R. avunculus.*

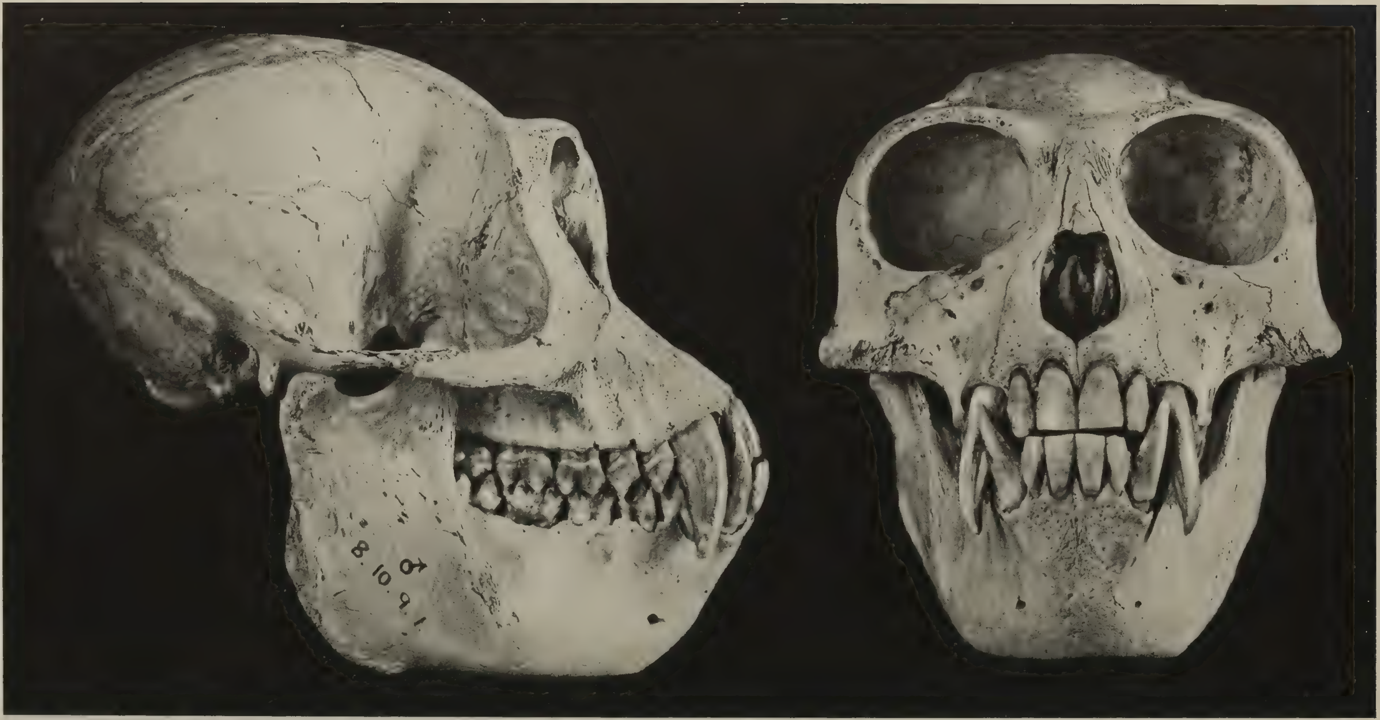
RHINOPITHECUS ROXELLANÆ (A. Milne-Edwards).

Semnopithecus roxellanæ A. Milne-Edw., Compt. Rend., LXX, 1870, p. 341; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 65; Anders., Zool. Res. Exped. Yunnan, 1878, p. 43; Forbes, Handb. Primates, II, 1894, p. 139.

Rhinopithecus roxellanæ A. Milne-Edw., Rech. Mamm., 1868-74, p. 233, pls. XXXVI, XXXVIII; Blyth, Mamm. Burma, 1875, p. 11; De Winton, Proc. Zool. Soc. Lond., 1889, p. 572.

MOUPIN LANGUR.

Type locality. Eastern Thibet. Type in Paris Museum.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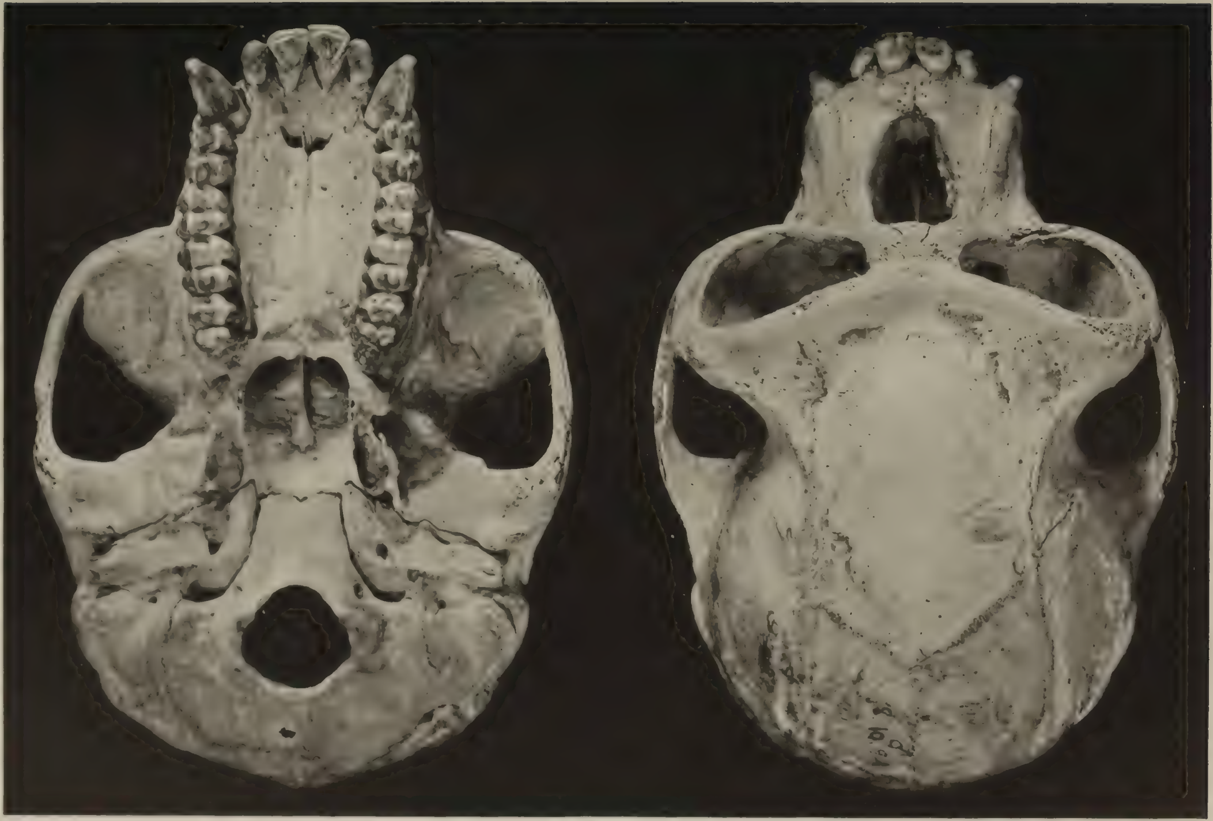
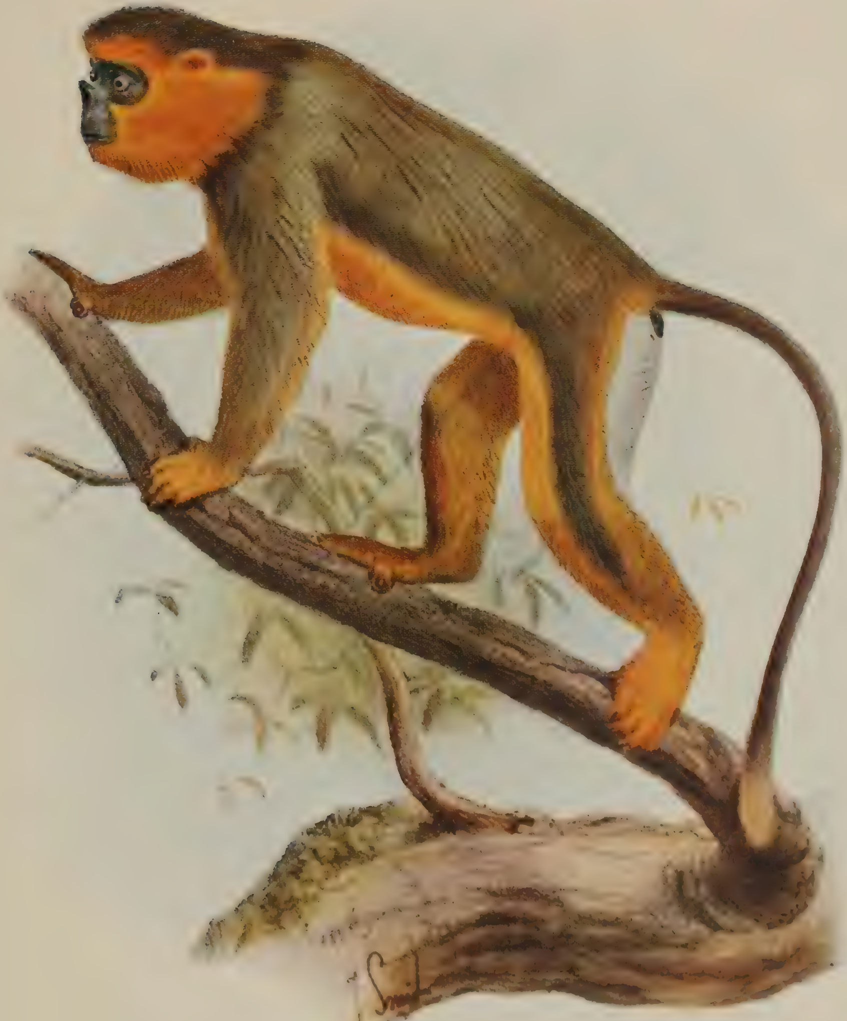


RHINOPITHECUS ROXELLANÆ.

No. 8.10.9.1. Brit. Mus. Coll. 4/5 Nat. Size.



Rhinopithecus roxellanae

Geogr. Distr. Moupin, north-western China to Kokonoor, and Kansu Kinsu, northwestern Sechuen, (Styan). Eastern Thibet.

Genl. Char. Face naked, green; nose small, depressed in center, tip elevated; a rufous line of hairs towards nose across face.

Color. Male. Top of head, nape and upper parts, shoulders, and upper part of outer side of arms grayish black; this overlaid on back, and sides, and shoulders, with long silvery gray hairs; rump and tail grayish black, tip of tail whitish; forehead, temples, sides of head and neck, shoulders, chin, throat, and upper part of breast rich deep rufous; outer side of forearms silvery color; grayish black line down outer side of leg; inner side of arms and legs orange ochraceous; under parts yellowish white; hands buff yellow; feet orange ochraceous; ears hidden in fur, but deep rufous tufts protrude upwards. Ex specimen British Museum.

Female. Is similar to the male, but the head and upper parts, and outer side of limbs are brownish black, and there are only a few strands of buff and buffy ochraceous hairs straggling over upper back and shoulders; forehead, line on face, temples, side of head and neck to shoulders, chin, throat, and upper part of breast rufous, not so deep as in the male; tufts on ears yellowish white; outer side of arms, legs and tail brownish black; inner side of limbs, and under parts pale buff; patch on upper part of thighs externally, and anal region whitish; wrists and ankles, hands and feet orange buff. Ex specimen British Museum, West China.

Measurements. Total length, 1,270; tail, 700; foot, 190, (skin). Skull: total length, 129; occipito-nasal length, 96; intertemporal width, 51; zygomatic width, 99; median length of nasals, 15; palatal length, 46; length of upper molar series, 33; length of mandible, 95; length of lower molar series, 40.

This species, the first discovered of the genus, is the handsomest of them all, but not the largest. It is a very striking object, with its short upturned nose, and brilliant coloring. It is near neighbor of its relative the next species, R. BIETI, their habitats separated probably by the River Blue, but does not equal it in size. Nothing is known of the habits of this species. The type is so faded from exposure to light that a description of it would be of no value.

RHINOPITHECUS BIETI A. Milne-Edwards.

Rhinopithecus bieti A. Milne-Edw., Archiv. Mus. Hist. Nat., Paris, X, 1898, p. 121, pls. IX-XII.

Type locality. Atentse, Chinese Province of Yunnan. Type in Paris Museum.

Geogr. Distr. Chinese Province of Yunnan; left bank of the Mékong, and right bank of Blue Rivers, Eastern Thibet.

Genl. Char. Size very large, powerful; body heavy, limbs moderate; tail long, rather thick. Just back of the forehead rises a narrow crest extending along center of head to occiput, diminishing in length as it goes backward, until it is very short on occiput. In front the long hairs curved forwards nearly reaching the brow. Hairs on tail curly. Colors black, brown and white.

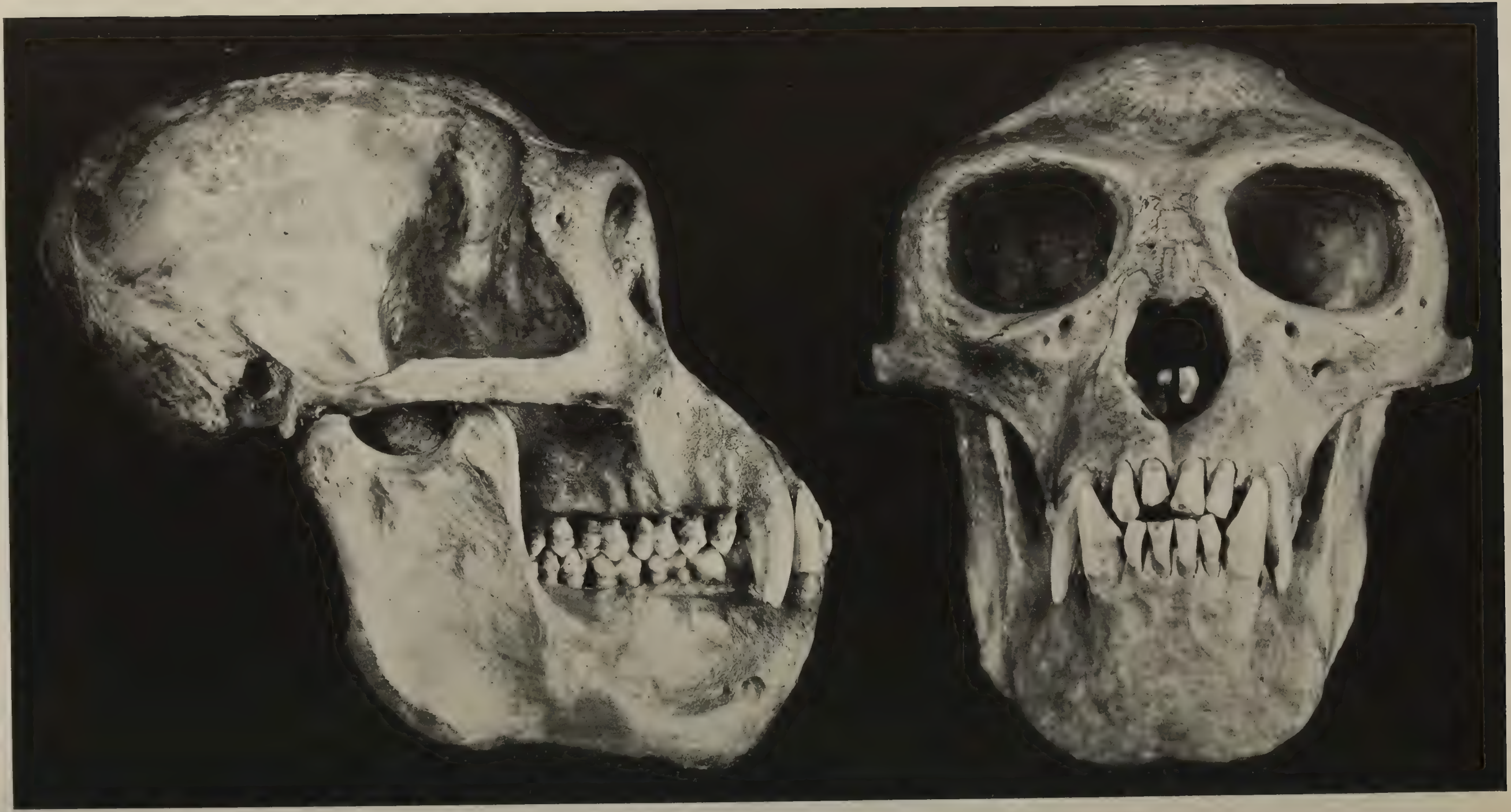
Color. Forehead and center of head occupied by the crest; crest itself, nape, entire upper parts and sides, outer side of arms, outer edge of thighs, and all the legs below knees, with hands, feet, and tail black with a brownish tinge on sides of body, and basal half of tail; sides of head and nape, and sides of face sooty white; a band across upper part, and line down center of chest dark brown; chin, throat, sides of neck below ears extending back to shoulders, inner side of arms above elbows, and thighs white, the hairs on thighs very long and hanging down from hinder edge in a thick fringe; inner side of forearms at elbow, and for a short distance below, and inner side of hind limbs dark reddish brown. Face around eyes green. Ex type Paris Museum.

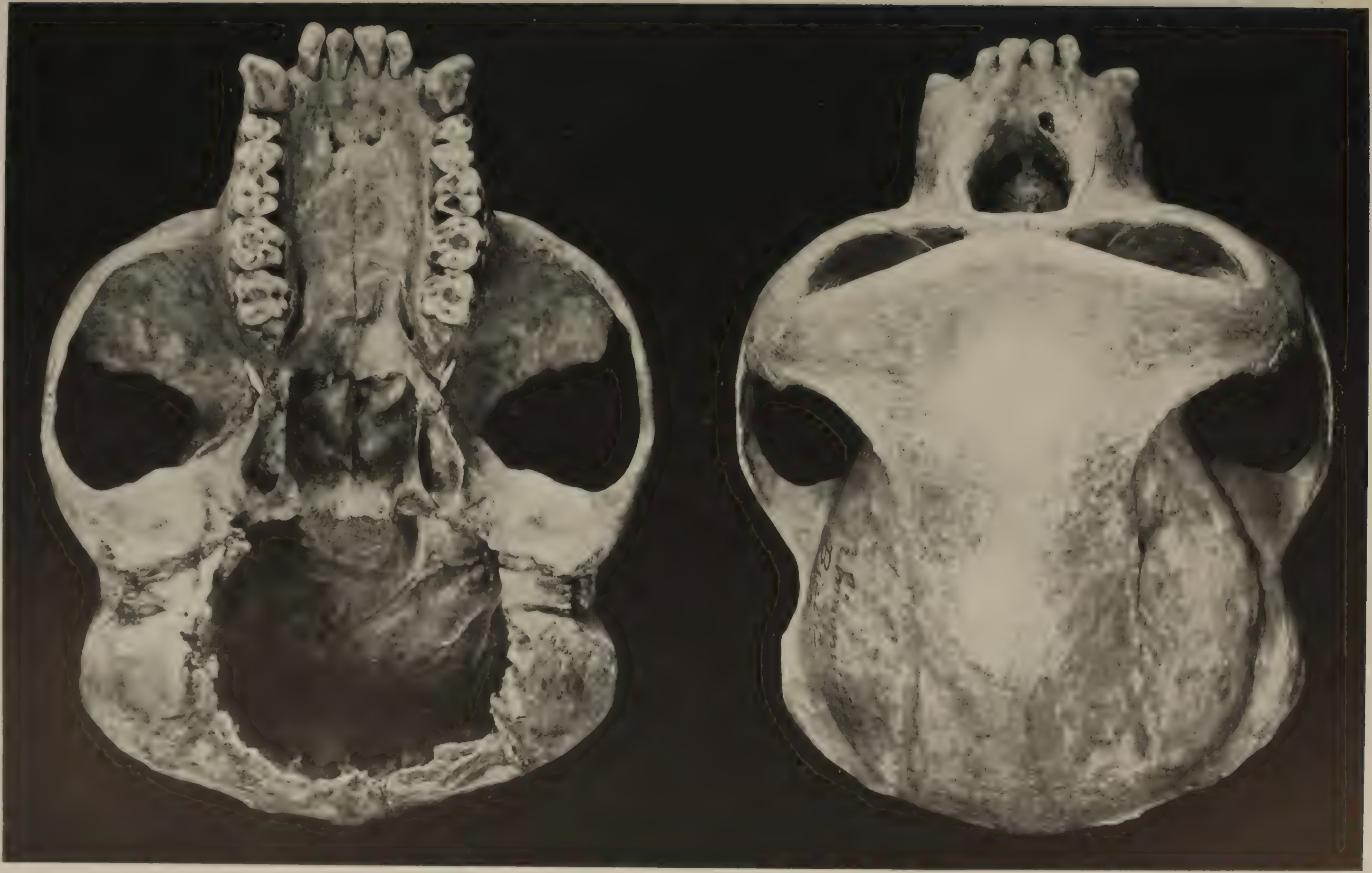
Measurements. Total length, 1,409.7; tail, 723.9; foot, 230.9. Skull: *Male.* Total length, 133; occipito-nasal length, 105; Hensel, broken; zygomatic width, 103; intertemporal width, 52; width of braincase, 78; median length of nasals, 10; palatal length, 53; length of upper molar series, 34; length of mandible, 95; length of lower molar series, 43. Ex type Paris Museum.

This is a splendid species, even larger than R. ROXELLANÆ, but lacks all the fine coloring of that animal, the hues of this one being restricted to brown, black and white, but the white is so effectively placed, that the individuals are very conspicuous even among their more brilliantly colored relatives. An entire family is in the Paris Museum, comprising adults and young.

M. A. Milne-Edwards says of this fine animal (l. c.) that "in the region of Tsékon, the R. BIETI is known by the name of *Tchru-tchra* or Monkey of the snows. It is difficult to give with precision the limits of its dispersion. As we have already indicated, all the individuals the Museum possesses were taken in the extreme northwestern part of the Chinese Province of Yunnan, on the left bank of

PLATE XI.





RHINOPITHECUS BIETI.

No. A. N. E. dv. Paris Mus. Coll. ⅘ Nat. Size.

the Mékong in the vicinity of Yerkalo, Atentsé and Tsékon. It is certain that along the straight and elevated crest that separates the Mékong from the Yantze-kiang in the places that are nearest to their course, it is found in large troupes. It may be supposed that these Rhinopithèques inhabit both sides of this chain, but at different seasons; in summer they would frequent the side towards China, and descend eastward towards the right bank of the River Blue; these would be the great black Monkeys mentioned by M. L'Abbé A. David; in winter, on the contrary, they would take up their abode on the western slope towards Thibet, and limited to the valley of the Mékong, as is proved by the period in which our specimens were killed by Mgr. Biet's hunters, several months after the last of August, the date of the passage of Prince Henry of Orleans from Tsékon. This last locality apparently is the approximate meridian limit of their domain; but to the northwest they must go quite near the Thibetan Province of Kham, both M. Bonvalet and Prince Henry of Orleans having seen them during their passage of the Tengri-Nor at Batang. Finally, to the east, the River Blue would probably be the natural barrier separating them from *R. roxellanæ,* their relative of the Principality of Moupin, and south of the Province of Kansu."

RHINOPITHECUS BRELICHI Thomas.

Rhinopithecus brelichi Thos., Proc. Zool. Soc. Lond., I, 1903, p. 224, pl. XXI.

BRELICH'S LANGUR.

Type locality. Unknown. Type in British Museum.

Geogr. Distr. Van Gin Shan range of mountains, north of the Province of Kwei-chow, 108° E. 29° N., Central China.

Genl. Char. Size very large; fur on flanks longest; oval white patch between shoulders; tail very long.

Color. Crown and cheeks yellowish, hairs tipped with black; nape black, hairs broccoli brown, black tipped; hind neck, hairs brownish with black tips; large white patch between shoulders, hairs white to roots; upper part of body and flanks slaty gray; sides of neck, hairs pale orange tipped with black, the orange deepening in color as it goes towards the shoulders and inner side of arms; outer side of arms black; outer side of thighs silvery gray, legs below knees black; inner side of limbs yellowish white, becoming orange next to the black on inner side; throat black, hairs being gray, black tipped; under parts of body ashy gray; tail very long, black for the entire length, and with a small white pencil at tip; ears black, the edges all around covered with short silver white hairs. Hands, feet, and fore parts of head missing. Ex type British Museum.

Measurements. Total length, 1,740; tail, 1,050, (skin). No skull.

A young animal, sex unknown, from the same mountain range is also in the British Museum. It is complete and resembles the adult. Forehead and top of head white, with long stiff black hairs on the superciliary line; space about eyes orange? perhaps flesh color; nose black, rest of face covered with short white hairs; whiskers reaching ears, whitish, but changing to black over temples; back of neck brownish and black mixed, running into the white patch between shoulders; upper parts of arms brownish gray; outer side of arms blackish brown becoming black on the hands; outer side of legs grayish white, with a black line from hip over knee nearly to ankle; under parts, and inner side of limbs grayish white, becoming smoky gray on legs below knees; tail blackish brown, with white speckling mostly noticeable at base; ear tufts white.

This specimen is interesting on account of giving us some idea of the color of the face, hands and feet, which in the adult would probably be black, but instead of the white head the same coloring seen on the anterior portion of the head of the adult would probably be continued to the forehead. As the measurements show, this is a very large monkey, with an extraordinarily long tail. In its style of coloring and texture of hair it differs much from R. ROXELLANÆ, and it will be interesting to obtain an adult skull to learn if this species is really a third member of RHINOPITHECUS or represents another genus.

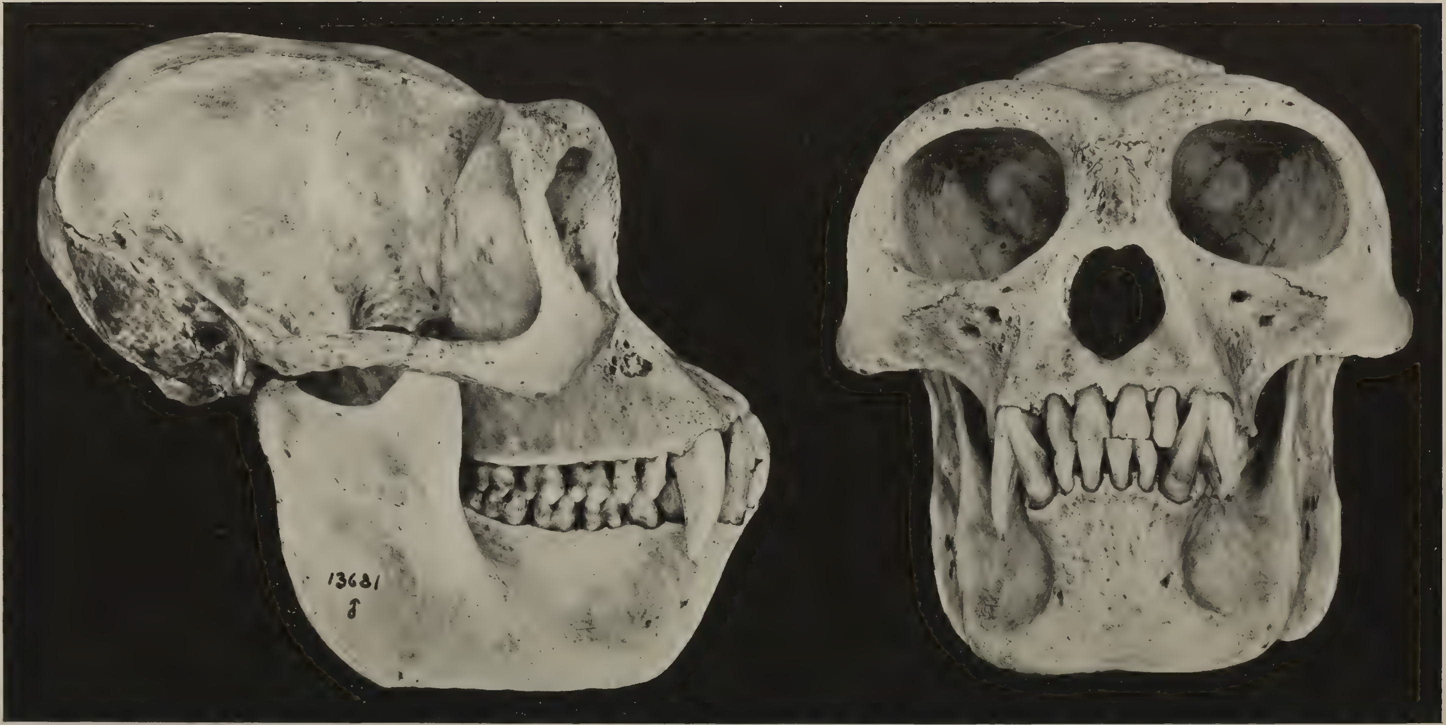
It evidently is a dweller of high mountains, the young one having been shot by a native hunter at an altitude of 7,000 to 8,000 feet. The two skins are the only ones yet obtained and nothing whatever is known of the creature's habits.

RHINOPITHECUS AVUNCULUS G. Dollman.

Rhinopithecus avunculus Dollman, Abstract Proc. Zool. Soc. Lond., 1912, p. 18. (March 26).

Type locality. "Yen-bay, Song-koi River, Tonkin."

Genl. Char. "Size smaller than in *Rhinopithecus bieti* M.-Edw., with dorsal surface of body black and under parts yellowish buff. Size and general proportions of body much less than in *bieti;* tail considerably longer. Hair shorter than in any of the other forms,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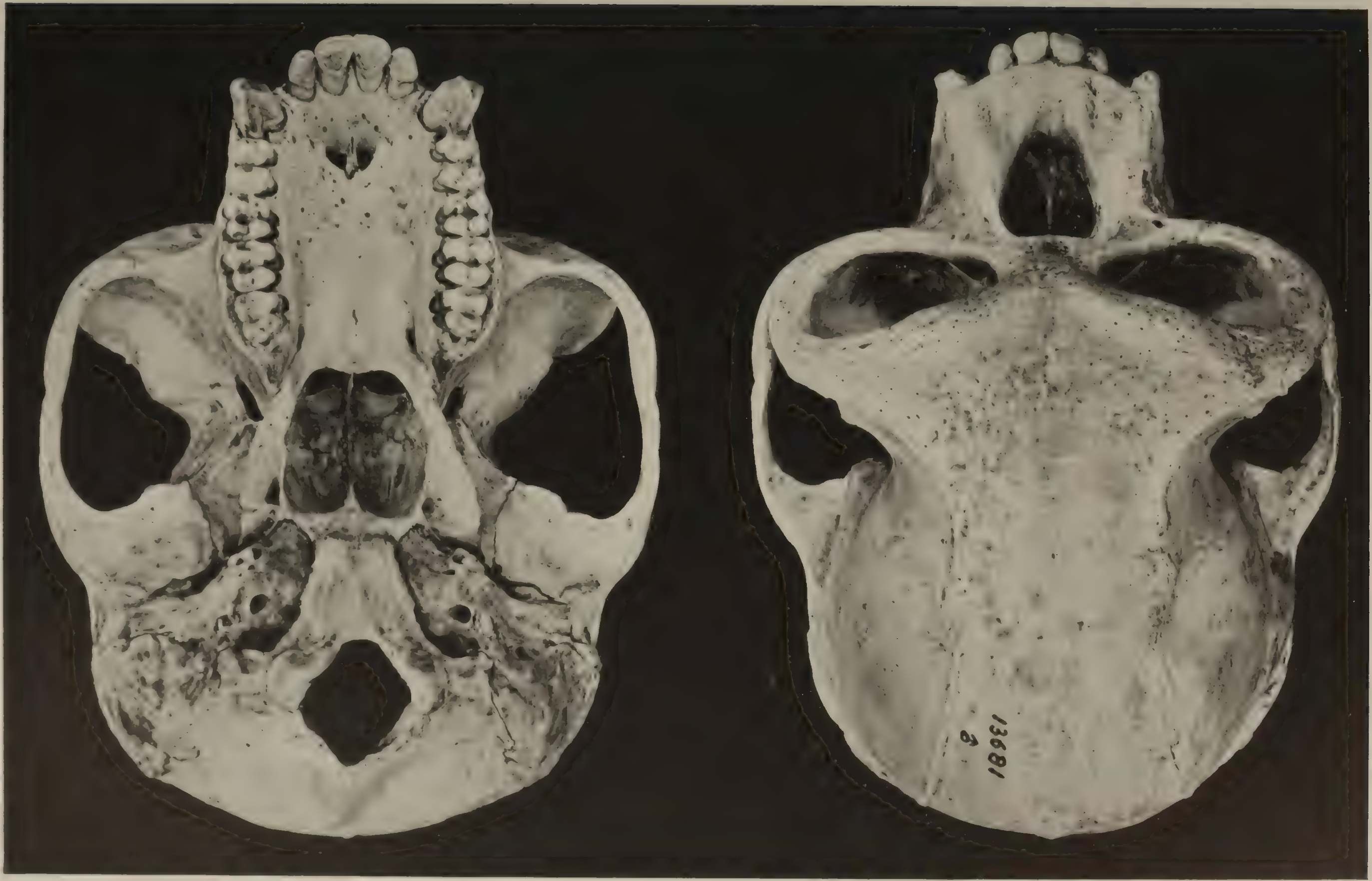

RHINOPITHECUS AVUNCULUS.

Mus. Comp. Zool. Cambridge Coll. No. 13681. ⅕ Nat. Size.

the general appearance more that of a true **Presbytis* than a *Rhinopithecus.* No well-marked crest on crown of head, the hairs in this region only slightly longer than on the neck; in *bieti* a conspicuous crest is present in both sexes. Ears not concealed by dense tufts of hair, rather more marked than in the Mekong species. Skull like that of *bieti* as regards the general shape, but smaller and with smaller cheek-teeth. Supraorbital region rather more like that of *roxellanæ* than of *bieti;* muzzle formed as in the latter species, without any well-marked concave depression of the premaxillary region. Interorbital breadth less than in *roxellanæ.* Zygomatic arches almost parallel, not expanded laterally."

Color. "General colour of dorsal surface deep black, tinged with brownish on the crown and nape; the black coloration extends all over the dorsal surface, both of body and limbs. Sides of face and forehead creamy white tinted with buff, the colour gradually darkening on the back of the forehead and merging into the dark blackish brown of the crown. Supra-orbital line of stiff black hairs well developed. Face around eyes naked and apparently flesh-coloured; a crescent-shaped row of creamy-white hairs extending from the temporal region on to and across the cheek. Sides of neck orange-buff, the bright buff-coloured hairs forming a most conspicuous border to the dark-coloured nape. Ears with creamy-white tufts arising from their inner sides. Rump with two prominent buffy-white patches on either side of the tail, connecting with the light-coloured markings on the backs of the thighs, but not forming the large conspicuous light-coloured areas such as occur in *bieti.* Backs of hands and feet covered with rather short black hairs, the hair not sufficiently long to conceal the digits nor extending over the nails. Entire ventral surface of body yellowish buff, the buff tint most dominant on the throat and anterior portion of the belly; no trace of any grey or dark-coloured hairs on the chest and neck. Inner sides of arms yellowish white, the colour almost white at the elbow and visible from above as a light cream-coloured border, the contrast between the black hairs on the outer side and the bright yellowish white of the inner side of the arm being most marked. The light yellowish colour extends right down the inner sides of the limbs as far as the hands and feet, where it is somewhat duller and dirtier. Tail long, measuring 100 mm. longer than that of *bieti;* clothed with comparatively short hairs, except at the tip, where the hairs are rather longer and form a distinct tuft. Colour, above dark black mixed with creamy white down the mid-line with a creamy-buff border; terminal tuft almost pure white, faintly washed with pale buff; ventral surface considerably lighter." Ex type British Museum. Adult ♀.

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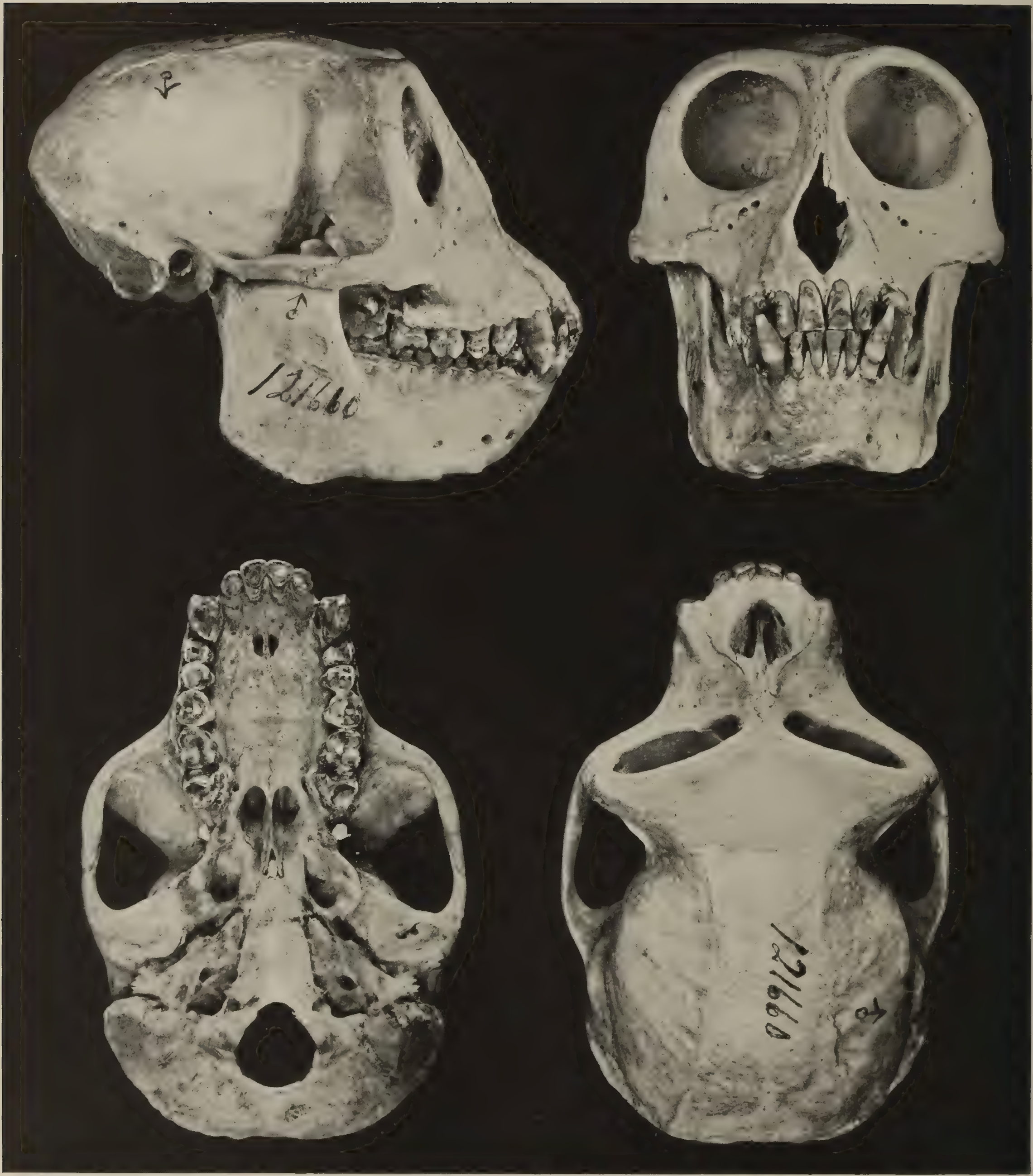
*PYGATHRIX.

Measurements. "Head and body 520 mm.; tail 660; hind foot 165; ear 40, (measured in the flesh). Skull: greatest length 109 mm.; basilar length 68; zygomatic breadth 77; greatest breadth across orbital region 72.5; greatest diameter of orbit 28; interorbital constriction 11; greatest width of cranium 68.3; palatilar length 32.9; width of palate (inside m^1) 20.5; length of upper tooth-row, from front of first premolar to back of last molar, 30." Ex type British Museum.

"This interesting monkey was readily distinguished from its nearest ally, *R. bieti,* by its dark black back, yellowish-buff under parts, and light coloured tail.

"A young specimen, sent with the type, was coloured in much the same manner as the adult, only very much paler, the crown of the head and hind limbs being yellowish tinged with grey, whilst the back was just commencing to become dark. The entire under parts were, as in the adult, a rich yellowish-buff colour."

This fine species is the fourth of the present genus, which contains, in so far as the face and particularly the nose is concerned, the most bizarre members of the Primates. They are all large, conspicuous animals, and the discovery of the present species indicates that probably many more unknown forms belonging to this great order yet remain to reward the efforts of enterprising collectors.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SIMIAS CONCOLOR.

No. 121660 U. S. Nat. Mus. Coll. ⅘ Nat. Size.

GENUS III. SIMIAS. PAGI ISLAND LANGUR.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

SIMIAS Miller, Miscel. Coll. Smith. Inst. Wash., 1903, p. 671. Type *Simias concolor* Miller.

Skull as in NASALIS, but less pronounced rostrum, and narrower nasals. Nose like RHINOPITHECUS. Tail one third the length of head and body, naked except at tip which is tufted. Ischial callosities large. Teeth as in RHINOPITHECUS. No cheek pouches.

SIMIAS CONCOLOR Miller.

Simias concolor Miller, Miscel. Coll. Smith. Inst. Wash., 1903, p. 671.

PAGI ISLAND LANGUR.

Type locality. South Pagi Island, Sumatra. Type in United States National Museum.

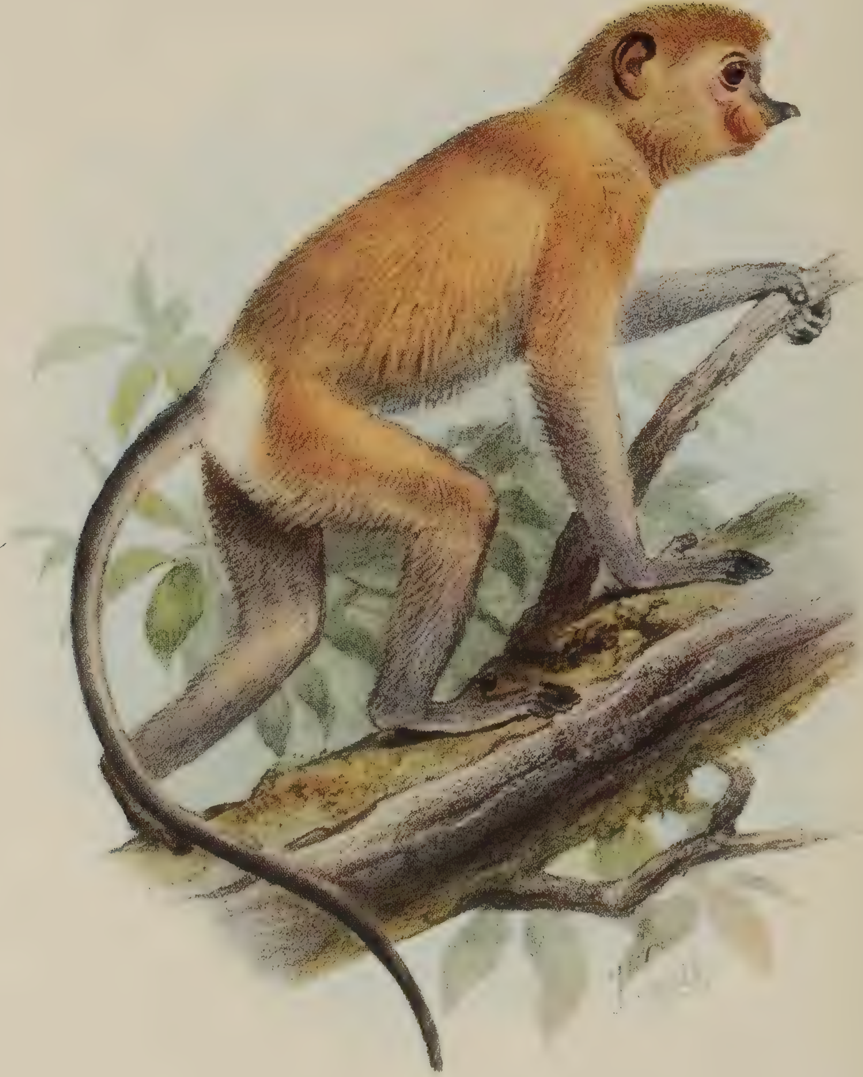
Genl. Char. Nose and teeth like RHINOPITHECUS ROXELLANÆ and R. BIETI. Skull as in NASALIS LARVATUS, but smaller rostrum, less produced, and nasals narrow; size like PITHECUS NEMESTRINUS; tail one third the length of head and body, naked, tip tufted; tufts of hair over ears and on each side of chin.

Color. General hue of head, body above and beneath, and limbs clove brown becoming black on hands and feet; hind neck, and shoulders, back and upper arms, the hairs annulated with buff; face, palms, soles, and callosities black; tail bare, tuft clove brown. Ex type United States National Museum.

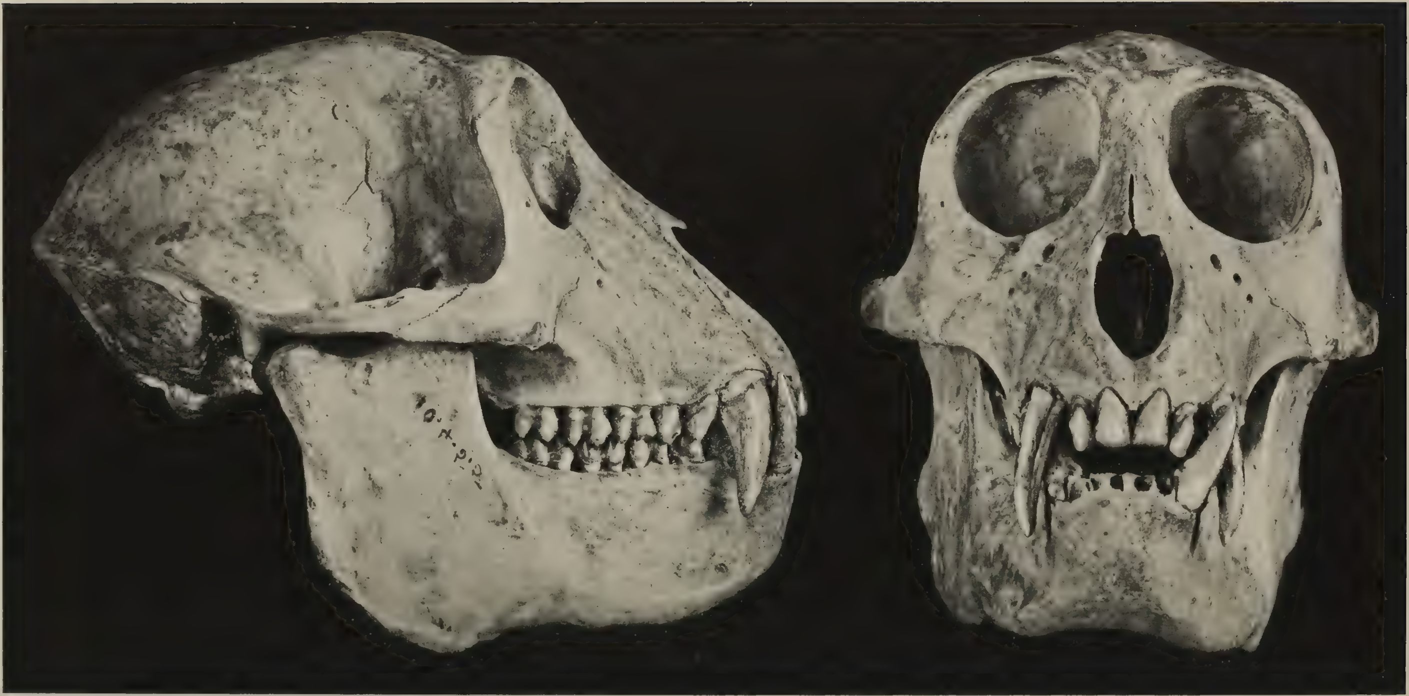
Measurements. Total length, 740; tail, 190. Skull: total length, 135.3; occipito-nasal length, 88.7; Hensel, 74.7; intertemporal width, 40; zygomatic width, 74.5; palatal length, 36.3; median length of nasals, 19.4; length of upper molar series, 30; length of mandible, 72; length of lower molar series, 35. Ex type United States National Museum.

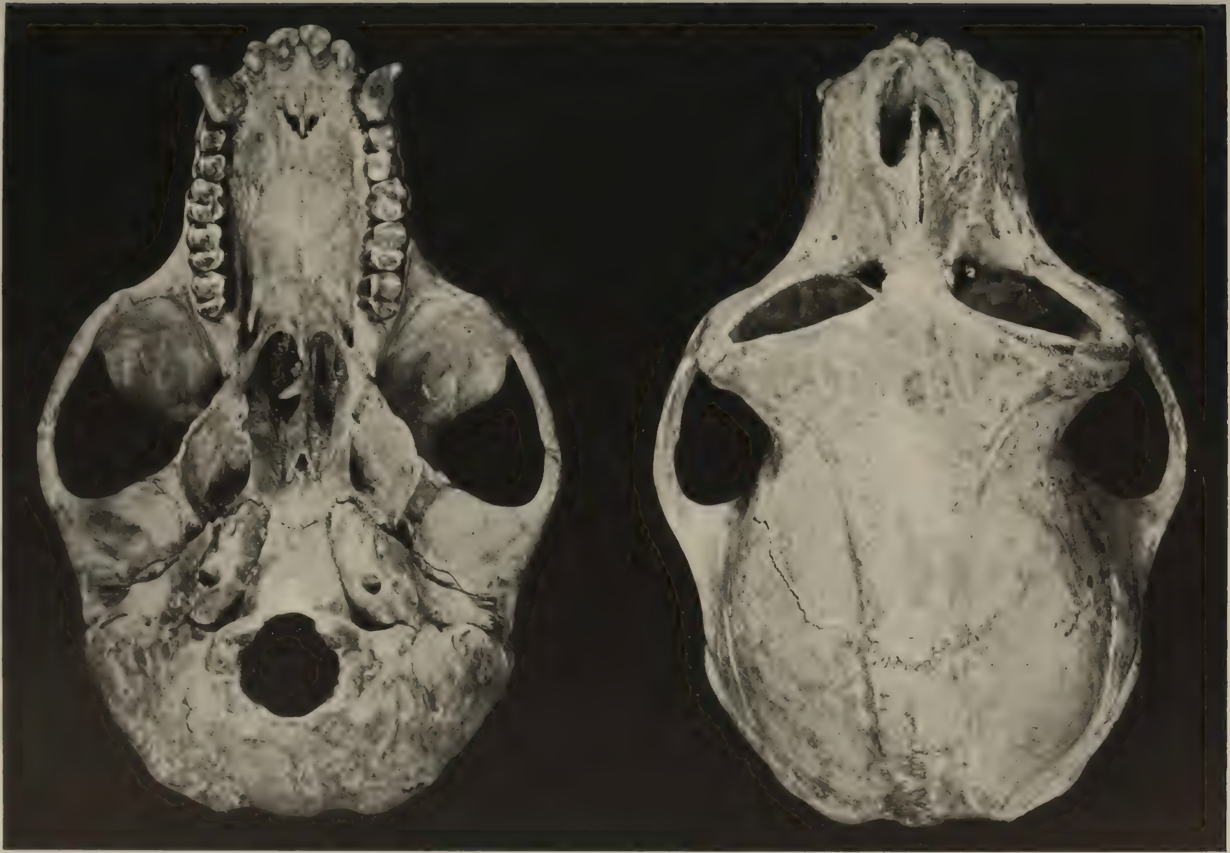
This is a very remarkable species, allied in some respects to the members of *Rhinopithecus,* but very distinct from them both generically and specifically; and if it had not been overshadowed by the large size and brilliant or striking coloration of those animals, would doubtless have been considered one of the most remarkable discoveries among the Primates in late years. So far as is known, it is restricted to South Pagi Island of the Mettawee Group, but it may be found an inhabitant of other islands of the group as they become better known. With its small upturned nose, short naked tail with a terminal tuft, and jet black pelage, it is a most unique and extraordinary animal.

The remark may be pardoned, that we might wish a different name had been selected for the genus, the great similarity between the one chosen and the long established *Simia* of Linnæus, being very apt to create confusion.



NASALIS LARVATUS, JUV.





NASALIS LARVATUS.

SIDE VIEW REVERSED.

No. 10.4.5.5. Brit. Mus. Coll. ⅘ Nat. Size.

GENUS IV. NASALIS. PROBOSCIS MONKEY.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

NASALIS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 90. Type *Cercopithecus larvatus* Wurmb.

Rhinalazon Glog., Hand u. Hilfsb. Naturg., I, 1841, pp. XXVII, 36.

Rhynchopithecus Dahlb., Stud. Zool., I, Andra Häftet, 1857, pp. 83, 91-94, Tab. IV.

Nose proboscis-like, capable of dilatation; nostrils opening downwards, separated by a thin septum; nose furrowed in center in adult males, seeming to be double; forehead low; eyes separated widely; laryngeal sac large; ears small; chin bearded; hair on upper part of body and head long. One species only known.

NASALIS LARVATUS (Wurmb).

Cercopithecus larvatus Wurmb, Mag. Neuste. Phys. u. Nat., II, 1784, p. 7.

Simia (*Cercopithecus*) *nasicus* Kerr, Animal Kingd., 1792, No. 55; Kuhl, Beitr. Zool., 1820, p. 12.

Cercopithecus capistratus Kerr, Animal Kingd., 1792, No. 56.

Nasalis larvatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 91; Less., Spec. Mamm., 1840, p. 66; Jacq. et Pucher., Voy. Pole Sud, Zool., III, 1853, p. 17, pls. II, IIA, IIB; Reichenb., Vollständ. Naturg. Affen, 1862, p. 124, figs. 317-320; Lenz., Zool. Gart., XXXII, p. 216; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 8; Hose, Mamm. Borneo, 1893, p. 8; Forbes, Handb. Primates, II, 1894, p. 140; Lyon, Proc. U. S. Nat. Mus., 40, 1911, p. 141.

Cercopithecus nasicus Desm., Nouv. Dict. Hist. Nat., XV, 1817, p. 574; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 102, pl. XB.

Simia nasica F. Cuv., Dict. Scien. Nat., XV, 1821, p. 32.

Semnopithecus nasicus Desmoul., Dict. Class. Hist. Nat., VII, 1825, p. 570; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 11, 8me Leçon; Schinz, Syn. Mamm., I, 1844, p. 43; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 35; Selenka, Stud. Entw. Tier. Menschens-Aff., 1900, Achtes Heft, pp. 189-191, figs. 25, 26, and A to G.

Nasalis recurvus Vig. and Horsf., Zool. Journ., IV, 1828-29, p. 109, fig. juv.; Martin, Proc. Zool. Soc. Lond., 1837, p. 71.

Semnopithecus larvatus Fisch., Syn. Mamm., 1829, p. 16; Martin, Mammif. Anim., 1841, p. 453, figs. 279, 280-282.

Rhynochopithecus (!) *nasalis* Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 93, tab. II.

Semnopithecus (*Nasalis*) *larvatus* Anders., Zool. Exped. Yunnan, 1878, p. 42; *Id.* Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 56.

Semnopithecus nasicus Pryor, Zoologist, 1881, p. 398; Jent., Notes Leyd. Mus., 1897, p. 35.

PROBOSCIS MONKEY.

Type locality. Borneo.

Geogr. Distr. Island of Borneo.

Color. Top of head light ferruginous; back of neck, back, sides, arms to elbow cinnamon rufous; sides of head and neck, chin, throat, and under parts bright pinkish buff; forearms buffy white; rump white; thighs pale reddish, grading into buff tinged with red on legs; tail white, tip black; face and nose flesh color; hands and feet buffy white.

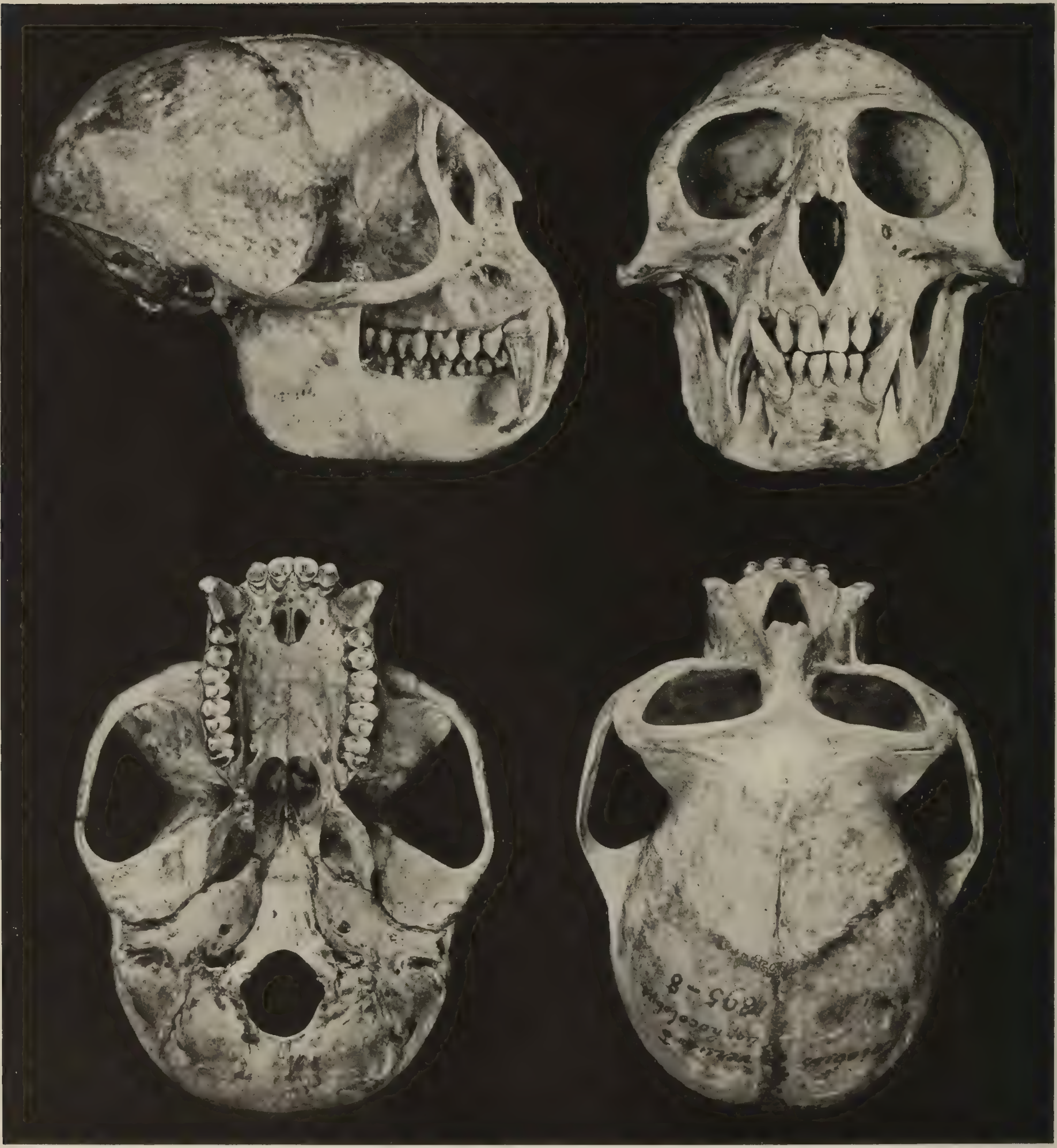
Measurements. Skull: total length, 135; occipito-nasal length, 111; Hensel, 96; intertemporal width, 45; zygomatic width, 95; median length of nasals, 24; palatal length, 45; length of upper molar series, 33; length of mandible, 94; length of lower molar series, 45.5.

This extraordinary monkey is restricted to the Island of Borneo, where it dwells in the vast forests growing in or near water. Very little is known of its habits as it has only been met with by the few travellers who have seen it as they passed along the rivers. It is strictly arboreal and goes in small troops, and is known to the natives as *Blanda* or *Rasong*. There seems to be but one species of this monkey, at all events, among the considerable number of examples I have examined at various times, there existed a constant uniformity of color and markings. It is true that a Mr. Pryor, (l. c.) writes of a monkey he obtained on the Island of Balhalla, near Sandaken Bay, which he described as resembling a 'picture' of PYGATHRIX NEMÆUS, but which had a nose as large as the Proboscis monkey. It was "three feet eight inches high, about as big as the smaller species (?) of orang-outan, strongly built, and with a determined expression." I have not seen an example from this island, but *P. nemæus* is a native of Cochin China, and the Island of Hainan, and neither it, nor its relative, P. NIGRIPES, has ever been found, so far as I am aware, in Borneo or on any of the near lying islands. A long-nosed monkey colored like either of the two species mentioned, would certainly represent an undescribed species.

Mr. Hornaday met with the Proboscis Monkey in Borneo, and states, "as usual, they were over water, and being swift climbers and quite shy were hard to kill. I saw altogether during my ramblings in the forests of Borneo, perhaps a hundred and fifty Proboscis Monkeys, and without a single exception, all were over water, either river, lake, or submerged forest. As long as they are in sight they are very conspicuous objects, choosing the most commanding positions in open tree-tops; once I saw thirteen in one tree, sitting lazily on the branches, as is their habit, sunning themselves and enjoying the scenery. It was the finest sight I ever saw in which Monkeys played a part. The cry of the Blanda is peculiar and unmistakable. Written phonetically it would be 'Honk' and occasionally 'Kee-Honk' long drawn and deeply resonant, quite like the tone of a bass viol. The Proboscis Monkey is a large animal of striking appearance both in form and color. Taken altogether, *Nasalis larvatus* is to the hunter-naturalist a very striking object of pursuit, and were he not partially eclipsed by the orang he would be the most famous Quadrumane in the East Indies."

There is a more or less general impression that monkeys cannot swim, and the following account of a Proboscis Monkey swimming one of the rivers in Borneo was given to me by my friend Mr. C. William Beebe, the Curator of Birds in the New York Zoological Garden, and proves at all events as regards this species, that such a belief is entirely incorrect. The natives informed Mr. Beebe that these monkeys were often seen swimming across the rivers.

"Up the Rejang River in small steamer. At 7 A. M. (about three and a half hours below Sibu) where the river was about one hundred and fifty yards wide we passed a Long-nosed Monkey (*Nasalis larvatus*) in mid-stream swimming strongly. His fore arms moved dog-fashion downward and back, but he swam first on one side then on the other. Once when he turned his head with its prominent nose, backward to look at us, his arms swept far apart, man-fashion, but almost at once he returned to the other method. These monkeys inhabit all this delta region of half submerged nipa palms and owing to the wide intersecting tidal reaches, they must frequently utilize this habit of swimming. The natives say it is a common occurrence. The Malay Captain fired wantonly at the poor beast but I nudged his arm and the shot went wide. The monkey dived and remained beneath the surface for 28 seconds by my watch, then came up a few feet ahead and swam on as strongly as ever."



COLOBUS VERUS.

No. 1895.8. Paris Mus. Coll. ⅘ Nat. Size.

GENUS V. COLOBUS. THE GUEREZAS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

COLOBUS Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 69. Type *Simia polycomus* Schreber.

Colobolus Gray, Lond. Med. Repos., XV, 1821, p. 108.

Guereza Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, pp. 5, 19.

Procolobus Rochebr., Faun. Sénégamb., Suppl. Vert., Prem. fasc., 1886-87, pp. 95, 97-102, pl. I.

Tropicolobus Rochebr., Faun. Sénégamb., Suppl. Vert., Prem. fasc., 1886-87, p. 102, pls. II, XXVIII.

Piliocolobus Rochebr., Faun. Sénégamb., Suppl. Vert., Prem. fasc., 1886-87, p. 105, pls. III-VI.

Stachycolobus Rochebr., Faun. Sénégamb., Suppl. Vert., Prem. fasc., 1886-87, p. 114, pl. VII.

Pterycolobus Rochebr., Faun. Sénégamb., Suppl. Vert., Prem. fasc., 1886-87, p. 125, pl. X.

Lophocolobus Pousarg., Bull. Mus. Hist. Nat., Paris, III, 1895, p. 98.

Thumb nearly obsolete; body slender; ear rounded, naked, sometimes tufted internally; callosities large; tail long, frequently tufted; hairs on sides of body long, hanging like a fringe.

Skull: braincase large; muzzle short; lower posterior molar with five cusps; cheek pouches very small, nostrils widely separated; face covered by short, soft hairs, downy in texture. The brain has the cerebellum concealed by the cerebrum; and there is a *hippocampus minor* present. Vermiform appendix absent. Stomach elongate, with several pouches; muzzle short; callosities small. *Os centralis* in wrist present.

The Guerezas can be divided into two groups, which may be designated the Red and Black Guerezas. They are conspicuously separated from the Langurs by the practical absence of the thumb. They are large monkeys with exceedingly long tails, which are heavily tufted in the black members, in some species with enormous brushes, and as a rule they are handsome animals, and the long flowing white hair which decorates the coats of the black members affords a striking contrast to their sombre livery. The Red Colobi are the rarer, and there is no considerable collection of them in any Museum, but the black species are evidently more easily captured, and in a few collections are fairly well represented.

The Guerezas are forest loving animals, and striking as the coloring of their coats may be, and large as is their size, they are not easy to see amid the foliage, thus illustrating the well known fact, that the most brilliantly colored creatures, such as the tiger and zebra, are by no means the most conspicuous. Not many individuals are found together, and they usually keep to the tops of the loftiest trees. Their food consists of various fruits and leaves, and their peculiar stomachs are admirably fitted to digest the latter, for great quantities are rapidly swallowed at a time, as monkeys always eat in a hurry, whether impelled by greediness or fear. The Black Colobi appear to bear extremes of temperature without difficulty and are found at an elevation of 9,000 feet on the great Uganda mountain of Ruwenzori, and on the Elgon Plateau; but they are equally at home in the tropical forests of the same Protectorate, bearing well the extremes of cold and heat. In Uganda, according to *Sir Harry Johnston, these monkeys live entirely on leaves, and seem to dislike animal food. Some native tribes eat them, and among the Andorobo it is the favorite article of diet. As a rule they do not live long in captivity and require much care; since deprived of an arboreal existence, they are not reconciled to a life upon the ground. Of the Red Colobi very little is known, as but few Europeans have met with them in the wild state.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1775. *Schreber, Die Säugthiere.*
In the volumes of plates accompanying this work, Pennant's figure of the *Full bottom Monkey,* is given with the name *Simia polycomus,* but no description is added in the text.

1800. *Shaw, General Zoology.*
Colobus ferrugineus first described as *Simia ferruginea,* and *Simia comosa* = S. POLYCOMUS Schreber.

1816. *Oken, Lehrbuch der Naturgeschichte.*
COLOBUS ABYSSINICUS first described.

1820. *Kuhl, Beiträge zur Zoologie.*
COLOBUS TEMMINCKI first described.

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*Uganda Protectorate, I, p. 362.

1834. *I. Geoffroy Saint-Hilaire, in Bélanger Voyage aux Indes Orientales, Mammifères.*
Colobus vellerosus first described as *Semnopithecus vellerosus.*

1835. *Rüppell, Neue Wirbelthiere zu der Fauna von Abyssinian gehörig entdeckt und beschreiben.*
Colobus abyssinicus renamed *C. guereza.*

1835. *Ogilby, in Proceedings of the Zoological Society of London.*
Colobus fuliginosus first described, and C. polycomus redescribed as *C. ursinus.*

1838. *Ogilby, in Library of Entertaining Knowledge.*
Colobus fuliginosus redescribed as *Colobus rufofuliginosus,* and Colobus rufoniger first described.

1838. *Van Beneden, in Bulletin de l'Académie Royale des Sciences et Belles-Lettres de Belgique.*
Colobus verus first described.

1838. *Waterhouse, in Proceedings of the Zoological Society of London.*
Colobus satanas, and C. penanti first described.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The following species of Colobus are here given with synonymy and descriptions: C. polycomus; C. ferrugineus; *C. guereza* = C. abyssinicus; C. temmincki; C. fuliginosus; *C. ursinus* = C. polycomus; and C. verus. No new species described.

1840. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen, Supplementband.*
Colobus verus redescribed as *Semnopithecus olivaceus.*

1857. *Le Conte, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
Colobus satanas redescribed as *Semnopithecus anthracinus.*

1860. *Sclater, in Proceedings of the Zoological Society of London.*
Colobus angolensis first described.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.*
The genus Colobus in this work has the following species: C. verus; C. ferrugineus; C. vellerosus; C. polycomus; *C. guereza* = C. abyssinicus; *C. ursinus* = C. polycomus; C. angolensis; and C. satanas.

1866. *J. E. Gray, in Annals and Magazine of Natural History.*
Colobus verus redescribed as *Colobus cristatus.*

1863. *Peters, in Monatsberichte Königliche Akademie der Wissenschaften, Berlin.*
Colobus palliatus first described.

1868. *J. E. Gray, in Proceedings of the Zoological Society of London.*
Colobus kirki first described.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats in Collection of British Museum.*
The species of Colobus known to the Author are here given. C. satanas; C. polycomus; C. angolensis; *C. bicolor* = C. vellerosus; C. ferrugineus; *C. cristatus* = C. verus; and under the genus *Guereza, G. rüpellii* = C. abyssinicus.

1879. *Peters, in Monatsberichte Königliche Akademie der Wissenschaften, Berlin.*
Colobus rufomitratus first described.

1885. *O. Thomas, in Proceedings of the Zoological Society of London.*
Colobus caudatus first described as *Colobus guereza caudatus.*

1886. *A. Milne-Edwards, in Revue Scientifique.*
Colobus tholloni first described.

1886. *Rochebrune, Faune de la Sénégambie, Supplement, Premier Fasicule, Mammifères.*
This work is a monographic essay on the genus Colobus, and is divided into two groups. "A. Formæ pilis brevibus vel subelongatis; vellere versicolore attamen præcipue rufo, castaneo, olivaceoque permixto" includes the following genera: *Procolobus* for C. verus; *Tropicolobus* for C. rufomitratus; *Piliocolobus* for C. ferrugineus; *C. bouvieri* first described; C. tholloni; and C. kirki; *Stachycolobus* for C. satanas; *Colobus* for *C. ursinus* = C. polycomus; and C. angolensis; *Pterycolobus* for C. vellerosus; *Guereza* with *C. rüppellii* = C. abyssinicus; C. caudatus; and C. occidentalis first described. B. "Formes douteuses ou Problématiques." He places here C. polycomus (!) and gives a list of synonyms which he afterwards discusses at length. Very fair colored figures of the species recognized are given. The genera proposed are not necessary but may serve as subgenera, indicating artificial groups for the division of the species.

1896. *E. de Pousargues, in Annales des Sciences Naturelles, Zoologie.*
In his paper on the Mammals of the French Congo, the Author here reviews the species of the genus Colobus, comments on the distinctive characters of the various forms, and discusses

their geographical distribution. He recognizes the following species: *C. guereza* = C. ABYSSINICUS; C. ANGOLENSIS; C. PALLIATUS; C. SATANAS; C. THOLLONI; C. PENNANTI; C. FERRUGINEUS; C. FULIGINOSUS; with *a. C. fuliginosus* var. *rufofuliginosus;* and *b. C. fuliginosus* var. *rufoniger;* and C. KIRKI.

In a previous paper in Volume I of the same publication he discusses C. VERUS; and *C. fuliginosus* var. *rufoniger* = C. RUFONIGER obtained by Mr. Moskowitz, and their relationship with allied forms.

1899. *Neumann, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*

COLOBUS OCCIDENTALIS redescribed as *Colobus matschie.*

1899. *Pousargues, in Bulletin du Muséum d'Histoire Naturelle, Paris.*

COLOBUS FOAI first described.

1900. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*

COLOBUS PREUSSI; and C. GODONORUM first described.

1900. *O. Thomas, in Proceedings of the Zoological Society of London.*

COLOBUS POLIURUS first described as *C. abyssinicus poliurus.*

1901. *O. Thomas, in Proceedings of the Zoological Society of London.*

COLOBUS RUWENZORI first described.

1902. *Neumann, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*

COLOBUS GALLARUM first described.

1902. *O. Thomas, in Proceedings of the Zoological Society of London.*

COLOBUS SHARPEI first described.

1906. *Lydekker, in Proceedings of the Zoological Society of London.*

COLOBUS SHARPEI redescribed as *C. cottoni.*

1906. *Trouessart, in Bulletin du Muséum d'Histoire Naturelle, Paris.*

COLOBUS OUSTALETI and COLOBUS NIGRIMANUS first described.

1907. *D. G. Elliot, in Annals and Magazine of Natural History.*

COLOBUS TEPHROSCELES first described.

1909. *G. Dollman, in Annals and Magazine of Natural History.*

COLOBUS ELLIOTI and C. GRAUERI first described.

1912. *Lönnberg, in Annals and Magazine of Natural History.*

COLOBUS CAUDATUS redescribed as *Colobus abyssinicus kikuyuensis.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The members of the genus Colobus are pretty evenly divided between the east and west coasts of Africa, in the central portion of the continent, being found from Abyssinia to Nyassaland on the east, and from Gambia and Lake Chad, Nigeria, to Angola on the west. Beginning with Abyssinia, in the Province of Godam and Kulla of the south and west, C. abyssinicus is found, ranging eastward probably into Somaliland; while in the forests through which the Omo flows C. poliurus dwells, and in the vicinity of Harrar at Abassie not far from the Somali border, C. gallarum was discovered, the extent of its range, however, unknown. Passing southward to the west of Lake Albert on the borders of Uganda and the Congo State the undescribed form in the Berlin Museum, from Avakubi, Lake Albert, is met with, and west of the north end of Lake Albert Edward, C. ellioti was discovered. On Mount Ruwenzori, at an elevation of 4,000 feet, C. tephrosceles was found, and on the north west flank of the same mountain, in the country of the Buambas, C. ruwenzori was obtained. In the vicinity of Mt. Kenia, C. caudatus was met with, and it extends its range to Mt. Kilimanjaro in German East Africa. At Muniuni, near Mombassa, C. rufomitratus was discovered, and opposite Zanzibar C. palliatus was found, its range not yet ascertained. C. kirki is restricted to the Island of Zanzibar, never found on the mainland, and now nearly extinct. Between Lake Tanganyika and the Upper Congo, C. foai ranges, and west of the same great lake, C. graueri was taken at Wabembeland. In the Ituri forest, and southward to the Tanganyika-Nyassa Plateau, C. sharpei ranges. In German East Africa at Udschumgwe Berge, C. godonorum is found.

In West Africa commencing at the most northern part where any species of Colobus dwells, we find in Senegambia, C. bouvieri; C. fuliginosus; and C. vellerosus; the last ranging to the Gold Coast, and C. satanas going to the Gaboon. In Sierra Leone C. ferrugineus is found going into Liberia, while in the southern portion of Sierra Leone, C. rufoniger is also met with, and C. polycomus going to Liberia. Fantee and Ashantee have C. verus, which is also stated to inhabit Liberia. In Nigeria from Lake Chad, through Central Africa along the Upper and Lower Congo to Victoria Nyanza, *C. occidentalis* has its range. At Barombi in Cameroon, C. preussi was found; while in the Congo River forest were obtained C. nigrimanus at Lirranga, C. oustaleti in the Youmba country, and C. tholloni, exact locality not known. On the Island of Fernando Po, C. pennanti is met with, and also in Gaboon; and lastly in Angola, and thence eastward to the Valley of the Pangani in German East Africa, C. ANGOLENSIS has its range. Of the recognized species, the habitat of C. TEMMINCKI is quite unknown, but if in the future it should be proved to be the same as C. FULIGINOSUS, Senegambia is the country in which it must be sought.

KEY TO THE SPECIES.

- A. Upper parts and legs not black.
  - *a.* Head partially crested.
    - *a.′* Median reddish olive crest tipped with black....*C. verus.*
  - *b.* Hairs on forehead directed forward.
    - *a.′* Tufts over ears.
      - *a.″* Black line between tufts, outside of limbs dark brown ....*C. rufomitratus.*
      - *b.″* No black line between tufts.
        - *a.‴* Outer side of limbs pale brownish gray ....*C. tephrosceles.*
        - *b.‴* Outer side of limbs red ....*C. nigrimanus.*
        - *c.‴* Outer side of limbs Prout's brown ...*C. ellioti.*
    - *b.′* No tufts over ears.
      - *a.″* Side of head and jaws red, tail at base dark brick red ....*C. preussi.*
      - *b.″* Side of head and jaws white.
        - *a.‴* Shoulders and arms black ....*C. kirki.*
        - *b.‴* Shoulders and arms red ....*C. bouvieri.*
      - *c.″* Sides of head and jaws yellowish red ...*C. tholloni.*
      - *d.″* Sides of head and jaws orange red ...*C. temmincki.*
      - *e.″* Sides of head and jaws black ..*Spec. from Avakubi, W. of L. Albert.*
      - *f.″* Sides of head yellowish white and red, between lower jaws red ....*C. foai.*
      - *g.″* Sides of head ferruginous ....*C. graueri.*
      - *h.″* Sides of head fuscous ....*C. oustaleti.*
- B. Upper parts black, legs not black.
  - *a.* Legs bright bay ....*C. ferrugineus.*
  - *b.* Legs tawny ....*C. fuliginosus.*
  - *c.* Legs dark ferruginous ....*C. rufoniger.*
  - *d.* Legs bright russet red ....*C. pennanti.*
  - *e.* Legs ? ....*C. godonorum.*

C. Upper parts, rump, and legs black.
  - *a.* No white on mantle.
    - *a.'* Head all black .... *C. satanas.*
    - *b.'* Forehead and auricular region grayish white.
      - *a."* Fur on back woolly .... *C. ruwenzori.*
      - *b."* Fur on back not woolly.
        - *a.'"* White on thighs .... *C. vellerosus.*
        - *b.'"* No white on thighs.
          - *a.""* Tail all white .... *C. polycomus.*
          - *b.""* Tail black at base grading into white .... *C. sharpei.*
  - *b.* Long hairs on mantle from shoulders only, white.
    - *a.'* No white line on forehead .... *C. palliatus.*
    - *b.'* White line on forehead .... *C. angolensis.*

D. Upper parts black, rump white.
  - *a.* Long white hairs from mantle and shoulders to tail.
    - *a.'* Tail, basal half black, rest white, tuft medium .... *C. abyssinicus.*
    - *b.'* Tail, two thirds black, tuft white .... *C. occidentalis.*
    - *c.'* Tail, basal half gray, rest black .... *C. poliurus.*
    - *d.'* Tail, black at base, rest white, brush enormous .... *C. caudatus.*
    - *e.'* Tail, basal half mixed gray and black, rest white, tuft long, thick .... *C. gallarum.*

Subgenus Procolobus.

Head crested.

COLOBUS VERUS Van Beneden.

Colobus verus Van Bened., Bull. Acad. Scien. Brux., V, 1838, p. 344, pl. XV; Less., Spec. Mamm., 1840, p. 70; Martin, Mammif. Anim., 1841, p. 503; I. Geoff., Cat. Primates, 1851, p. 17; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 37; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 95; Reichenb., Vollständ. Naturg. Affen, 1862, p. 86, figs. 190-192; Gray, Proc. Zool. Soc. Lond., 1868, p. 182; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 28; Forbes, Handb. Primates, II, 1894, p. 87; Pousarg., Ann. Scien. Nat., I, 8me Sér., 1896, p. 250, fig. 1 in text.

Semnopithecus olivaceus Wagn., Schreb., Säugth. Suppl., I, 1840, p. 309.

Colobus cristatus Gray, Ann. Mag. Nat. Hist., XVII, 3rd Sér., 1866, p. 77; *Id.* Proc. Zool. Soc. Lond., 1868, p. 182, pl. XV; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, pp. 19, 128.

Procolobus verus Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 97, pl. I.

VAN BENEDEN'S GUEREZA.

Type locality. "L'Afrique."

Geogr. Distr. Forests of Fantee and Ashantee; Liberia, (Buttikofer); West Africa.

Color. Head with median reddish olive crest; tips of hairs black; narrow band on forehead, sides of face and jaws pale yellow; neck and back olive brown ringed with black; nape, and around callosities tinged with reddish; sides of head and throat dirty gray; shoulders greenish gray; arms and thighs olive brown annulated with black; hands and feet dark reddish brown; under parts ashy gray; tail reddish brown at base, rest olive brown.

Measurements. Skull: occipito-nasal length, 80; Hensel, 58; zygomatic width, 68; intertemporal width, 37; median length of nasals, 18; length of upper molar series, 22; length of mandible, 61; length of lower molar series, 29. Ex specimen Paris Museum.

The type of *Colobus cristatus* Gray, is in the Collection of the British Museum. The specimen is mounted, and the skull having been removed, showed it to be a fully adult animal. The hairy crest, however, was not fully developed, but in coloring the example agrees with the present species, and it is doubtless the same, a conclusion that Gray himself arrived at, (vide Cat Monk. Lemurs, etc., App., p. 128).

Subgenus Tropicolobus.

Ears tufted; upper parts and legs not black.

COLOBUS RUFOMITRATUS Peters.

Colobus rufomitratus Peters, Monatsb. K. Preuss. Akad. Berlin, 1879, pls. IA, II; Forbes, Handb. Primates, II, 1894, p. 88.

Tropicolobus rufomitratus Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 120.

RED-CRESTED GUEREZA.

Type locality. Muniuni, near Mombassa, East Africa. Type in Berlin Museum.

Geogr. Distr. Forests of Muniuni, East Africa; range unknown.

Color. Band on forehead broadest on sides, and narrowest between eyes, black, the hairs standing upright on outer edge; indistinct black line from eye to ear; top of head in center ochraceous, remainder extending to a point above nose and back of neck rusty red; sides of head yellowish gray; tufts above ears black, this color extending nearly to center of head, but not across it; back to rump, shoulders, and sides of body, seal brown, nearly black in some lights; rump dark drab brown; limbs sepia; under parts and inner side of arms yellowish white; hands and feet dark olive brown; tail reddish brown grading into blackish at tip. No skull. Ex type Berlin Museum

COLOBUS TEPHROSCELES Elliot.

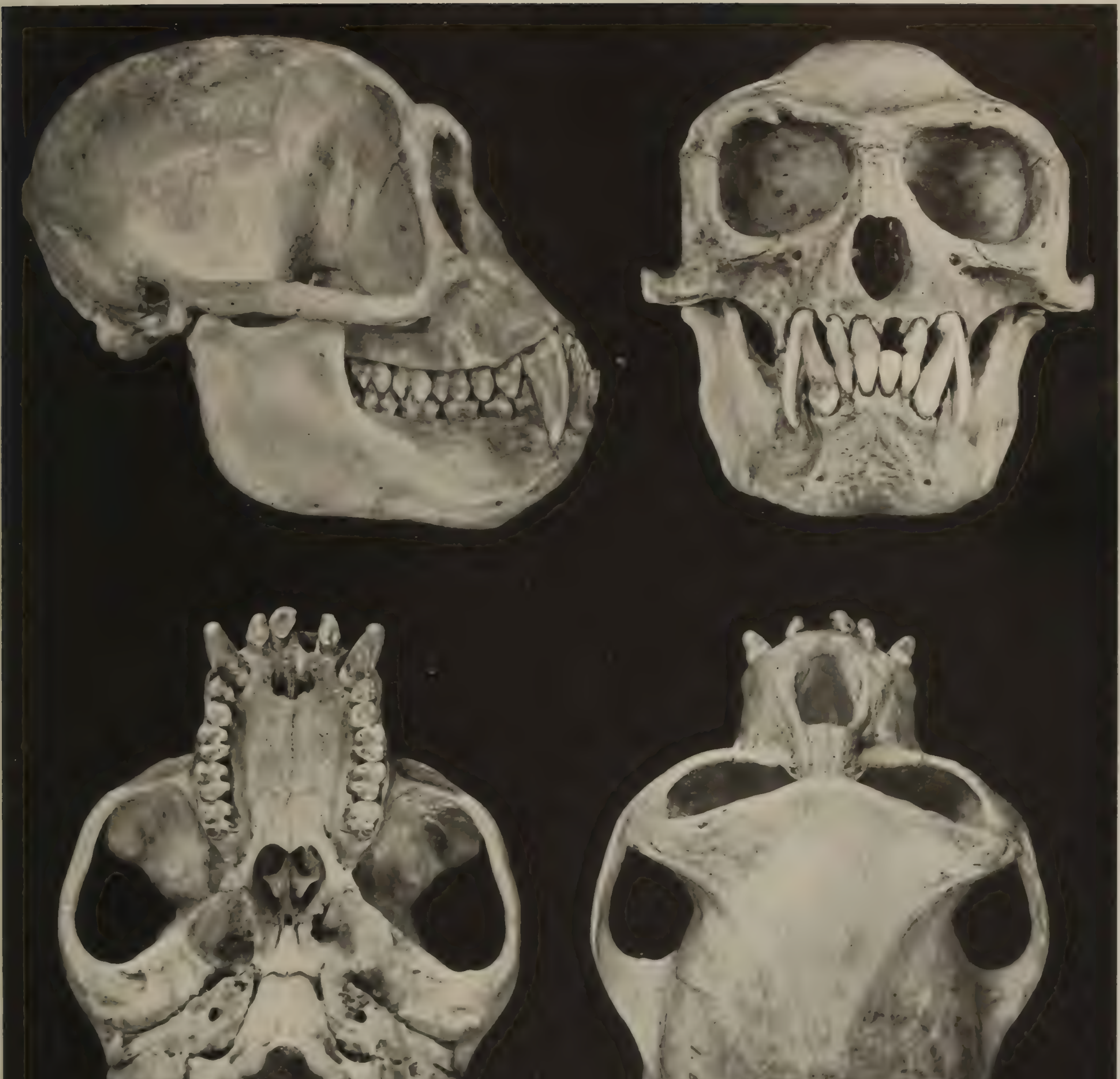
Colobus rufomitratus (nec Peters), Thos., Proc. Zool. Soc. Lond., 1901, p. 86.

Colobus tephrosceles Elliot, Ann. Mag. Nat. Hist., 7th Ser., 1907, p. 195.

Type locality. Ruahara River, Toro, Mt. Ruwenzori, altitude 4,000 feet, Uganda, East Africa. Type in British Museum.

Genl. Char. Similar to C. RUFOMITRATUS, but differs in not having any black on head between tufts, in the pale colored arms and legs, in the gray brown basal portion of the tail, and in the absence of a black stripe between ears and shoulders, and in the feet and hands being brownish black instead of dark olive brown (dunkel olivenbraun). Upright tufts on sides of crown above ears.

Color. A narrow black band on forehead extending backwards to ears; top of head and nape dark rusty brown; upright tufts dark rusty brown, mixed with some brownish black hairs tipped with yellow, these showing chiefly on the outer side of the tufts; sides of head between ears and eyes blackish gray, the hairs hiding the ears; side of upper lip extending down and covering lower jaw, purplish gray; hair on upper part of back long, covering the shoulders, brownish black, grading into dark Prout's brown on sides and rump; outer side of arms pale grayish brown; outer side of legs pale brownish gray; under parts and inner side of limbs grayish white; hands brownish black; feet Vandyke brown; tail, basal third grayish brown, remainder blackish brown grading into black at tip. Ex type British Museum.



COLOBUS TEPHROSCELES.

No. 1.8.9.46. Brit. Mus. Coll. ⅘ Nat. Size.

Measurements. No skull to specimen described. Another *skull, 1. 8. 9. 46. from Toro collected by Sir H. H. Johnston measures: total length, 100; occipito-nasal length, 81.5; Hensel, 65.5; zygomatic width, 77; intertemporal width, 64; palatal length, 36.2; median length of nasals, 13; length of upper molar series, 27; extreme length of mandible, 74; length of lower molar series, 33.

Three examples of this remarkable monkey, one adult and two young, were procured by Sir H. H. Johnston on the Ruahara River, district of Toro, on the east side of Mount Ruwenzori at an altitude of 4,000 feet. The species was not seen by the expedition lately returned from the exploration of the mountain, so it may be considered rare.

It bears a close resemblance to C. RUFOMITRATUS Peters from the Tana River, but differs sufficiently in coloration to warrant its separation as distinct. Possibly the skulls, if they were compared, would exhibit different cranial characters. The distance dividing the habitats of the two forms, one a coast dweller, and the other living in the interior at high elevations, and the fact that no examples have been as yet procured in the intervening districts, would naturally cause us to expect a different animal from the heights of Ruwenzori. No account of its habits is recorded, but like many of its relatives of this genus, it probably dwells in the tops of the high trees of the African forest, and so is most likely to escape detection. Sir Harry Johnston says of this species, that "the Red Colobus of Toro answers to its Greek name in the adults, which have only four fingers on the hands and the minutest trace of a thumb nail in the place where the thumb is missing. But the young Colobuses of this species have a complete thumb, only a little smaller than this finger would be in the *Cercopitheci*. As the animal grows to maturity, so its thumb dwindles, until in a very old male there may be absolutely no trace left of the missing finger."

COLOBUS NIGRIMANUS Trouessart.

Colobus nigrimanus Trouess., Bull. Mus. Hist. Nat., Paris, 1906, p. 444.

Type locality. Lirranga, banks of the Congo. Type in Paris Museum.

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*In the original description of this species, by a misunderstanding, the measurement of the skull of another species was given. The one recorded above is correct for this species, though not belonging to the type.

Genl. Char. Size large; tail long, tufted on apical portion; small tufts above ears; hairs on back long, forming a short mantle.

Color. Long hairs above eyebrows black; top of head and nape dark brownish red, becoming maroon on upper back and shoulders; rest of upper parts, and side of body and limbs, bright red; sides of head and throat grayish white tinged with yellow; chest dark yellowish brown; rest of under parts and inner side of limbs yellowish white; hands and feet black; tail dark red for three fourths the length; remainder dull dark maroon; ears apparently flesh color; face black. Ex type Paris Museum.

Measurements. Total length, 1,079.5; tail, 673.1; foot, 177.8. Skull: total length, 114; occipito-nasal length, 95; Hensel, 79; zygomatic width, 82; intertemporal width, 42; breadth of braincase, 59; median length of nasals, 14; length of upper molar series, 29; length of mandible, 76; length of lower molar series, 38. Ex type Paris Museum.

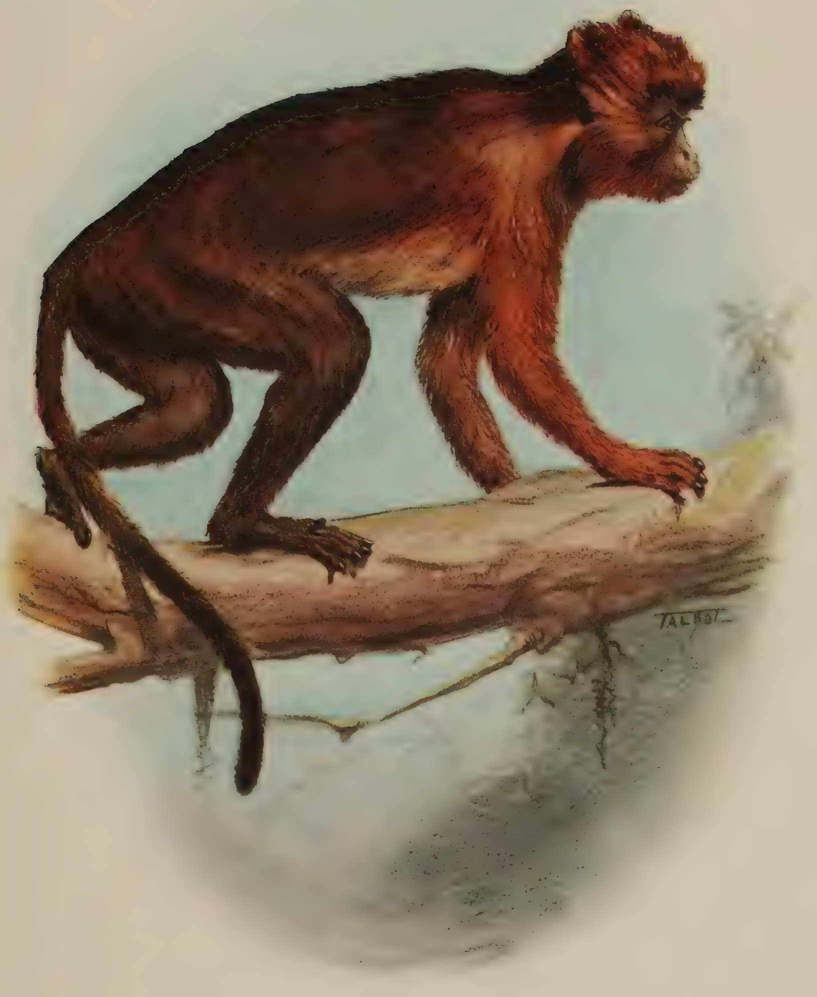
This species apparently belongs to the small group of red members of this genus, with small tufts behind and over the ears. It is a brilliantly colored animal, the red of body and limbs being very bright. It differs strikingly from its near relatives in having black hands and feet, and in addition from C. TEPHROSCELES, the species probably nearest to it, in the red thighs, these in the other animal being pale brownish gray.

COLOBUS ELLIOTI Dollman.

Colobus ellioti Dollman, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 474.

Type locality. 80 kilometres west of the north end of Lake Albert Edward. Type in British Museum.

Color. Male. Long hairs forming superciliary stripe, and indistinct line from eyes to ears black; top of head crested, brick red; back of head, sides of head and cheeks, and upper part of back chestnut red; arms and hands bright brick red; lower back and rump darker, the dorsal line almost black; legs from hips to ankles Prout's brown; sides of head behind ears pale red; chin olive gray, throat yellowish; sides of throat, inner sides of arms and chest pale rusty; under parts of body yellowish tinged with reddish on belly; inner side of legs yellowish near scrotum, remainder gray; tail above blackish maroon at base, rest black, beneath yellowish at base, rest black; feet Prout's brown; ears black with slender tufts of black and red hairs rising behind. Ex type British Museum.



COLOBUS ELLIOTI

Measurements. Total length, 1,380; tail, 690; foot, 170. No skull. Ex type British Museum.

Female. Top of head crested, and together with outer side of arms, brick red; hands blackish; back of head chestnut; back of neck and upper parts black with a brownish tinge on rump; outer side of legs Prout's brown becoming blackish on feet; under parts like male; tail black.

Measurements. Total length, 1,280; tail, 675; foot, 150. Skull: total length, 104.6; occipito-nasal length, 88.5; intertemporal width, 39.5; width of braincase, 54.5; Hensel, 76.2; zygomatic width, 72.7; palatal length, 38.2; median length of nasals, 13.2; length of upper molar series, 29; length of mandible, 73.2; length of lower molar series, 36.

This species is nearest to C. NIGRIMANUS Trouess., but differs in having the top of the head brick red, not dark brownish red, and the sides of the head chestnut red, not grayish white tinged with yellow; and the chest pale rusty, not dark yellowish brown, and the thighs gray instead of bright red. The tail is also different, the blackish maroon of the basal part and the rest black, contrasting with the three fourths dark red, and remainder, dull dark maroon tail of the allied species.

COLOBUS PREUSSI Matschie.

Colobus preussi Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1900, p. 183.

Type locality. Barombi, Cameroon, West Africa. Type in Berlin Museum.

Geogr. Distr. Cameroon, West Africa.

Color. Top of head black speckled with brick red; back of head and neck, (the hairs on sides of head falling over ears), and upper part of body black, the hairs rather indistinctly speckled with red on upper back, but more pronounced on lower back and rump where they give a tinge of red over that part; sides of face, arms, hands, flanks, legs, feet, and tail dark brick red; inner side of limbs yellowish white; chin, line on center of throat, chest and center of abdomen yellowish white; rest of under parts pale brick red; tail dark brick red for two thirds the length, grading to purplish red on apical portion.

Measurements. Total length, 1,480; tail, 795. No skull. Ex type Berlin Museum.

This is a very handsome species, remarkable for its red limbs and exceedingly long tail with its purplish tip. It is perhaps nearest to C. FERRUGINEUS.

COLOBUS KIRKI Gray.

Colobus kirki Gray, Proc. Zool. Soc. Lond., 1868, pp. 180, 181, pl. XV; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 127; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 25; Kirk, Ann. Mag. Nat. Hist., XIII, 5th Ser., 1884, p. 307; Forbes, Handb. Primates, II, 1894, p. 89; Pousarg., Ann. Scien. Nat. Paris, III, 7me Sér., 1896, p. 166.

Piliocolobus kirki Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 112, pl. VI.

KIRK'S GUEREZA.

Type locality. Island of Zanzibar.

Geogr. Distr. Restricted to the Island of Zanzibar.

Genl. Char. Face and ears naked, bluish black; tip of nose grayish white; long hairs on head bent backward over forehead.

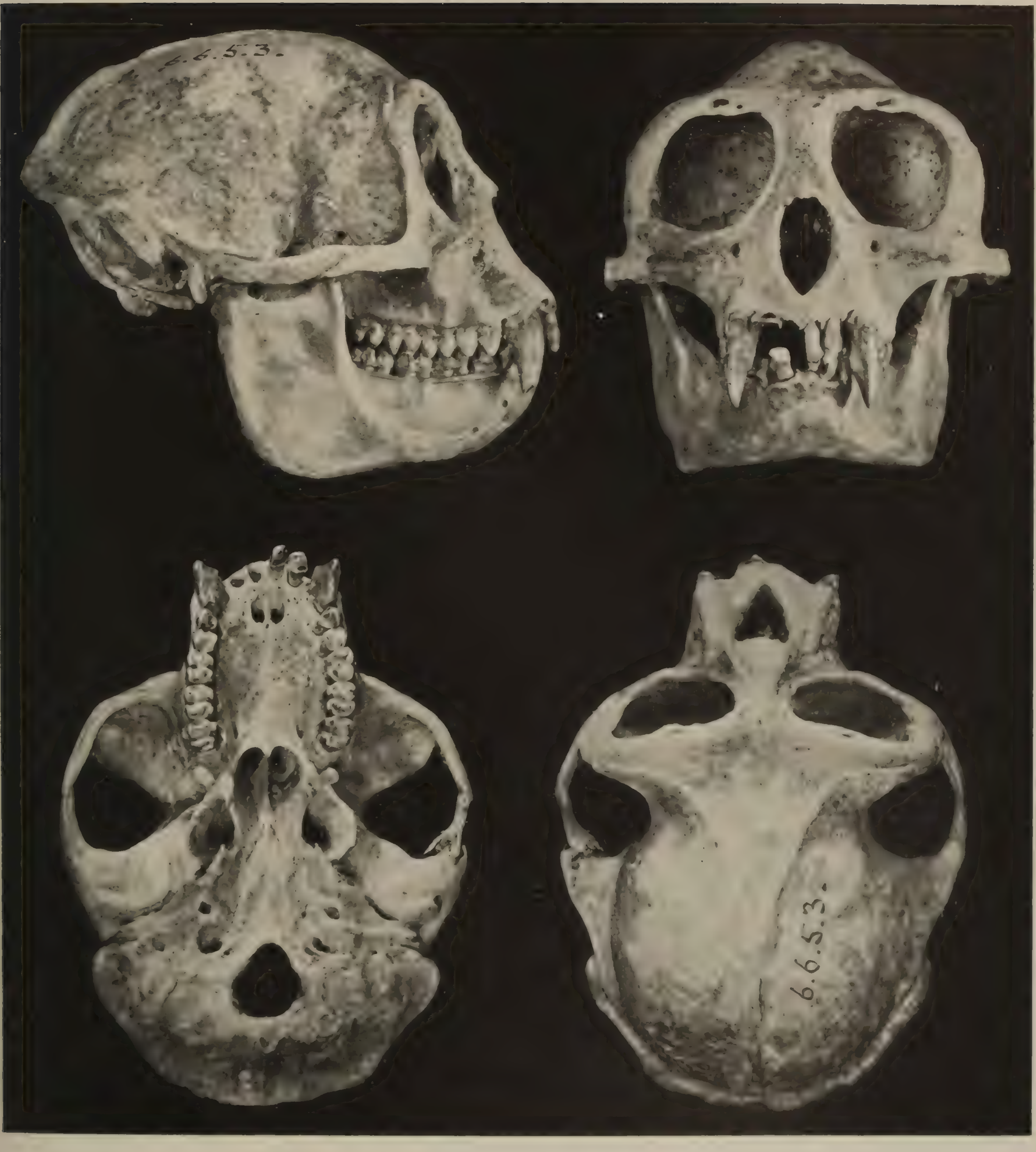
Color. Forehead and sides of head yellowish white, the long hairs extending beyond sides of head; crown of head reddish brown, as are also the upper parts from shoulders, and lower part of neck; shoulders, outer side of arms, hands and feet black; hairs on inner side of arms silvery gray to root; legs silvery gray, base of hairs black; throat and entire under parts of body grayish white; tail at base like back, rest dull reddish brown, beneath buff a few black upright hairs on brow.

Measurements. Total length, about 1,270; tail, 610; foot, 137, (skin). Skull: occipito-nasal length, 78.8; Hensel, 57.7; zygomatic width, 69; intertemporal width, 38; width of braincase, 52.2; palatal length, 26.8; median length of nasals, 14; length of upper molar series, 24.4; length of mandible, 68.1; length of lower molar series, 20.8. British Museum specimen, No. 6. 6. 5. 4.

The type of this species is in the British Museum preserved in spirits. It is quite a young individual, the canines and last molar just showing. I have therefore taken the measurements from an adult individual, as giving a more correct idea of the animal's size.

COLOBUS BOUVIERI (Rochebrune).

Piliocolobus bouvieri Rochebr., Faun. Sénégamb., Suppl. Vert., 1886-87, p. 108, pl. IV; Pousarg., Ann. Scien. Nat., I, 1896, p. 263, 8me Sér., Zool.



COLOBUS KIRKI.

No. 6.6.5.3. Brit. Mus. Coll. 4/5 Nat. Size.

Type locality. Gambia, West Africa. Type not in Paris Museum.

Geogr. Distr. Gaboon; Congo regions; forests of Gambia and Casamanca; West Africa.

Genl. Char. Face flesh color, around eyes and cheeks blue; sides of head white; upper part of body of a bright color, not dark as in C. FERRUGINEUS.

Color. Around eyes and cheeks blue, rest of face flesh color; ears paler; a narrow band on forehead, enlarging as it goes to the ears into a triangular shape, black; hairs on sides of head and jaws very long, white, tips of hairs pale yellow; upper parts of body brownish red, sides of body and arms bright red; outer side of thighs yellowish red; feet and hands reddish brown; throat, sides of neck, under parts and inner side of limbs white; tail golden brown.

Measurements. Total length, 1,375; tail, 750. No skull.

This species is nearest to C. PENNANTI from the Gaboon and the island of Fernando Po. The two species resemble each other in the white on cheeks, otherwise there is considerable difference in their coloring. Pousargues (l. c.) questions if this species is not one of the forms of C. FULIGINOSUS, and decides it is the same as C. PENNANTI. "Étant donnée d'autre part sa concordance pour ainsi dire parfaite des descriptions du C. PENNANTI et du C. BOUVIERI, il me paraît des lors impossible de reconnaître et de maintenir une distinction quelconque entres ces deux espèces." In spite of the opinion above given there seems to be a sufficient difference in coloration, to keep these animals, for the present at least, distinct, until adequate material may be obtained to enable a definite decision to be reached. Besides the differences mentioned above C. PENNANTI has the upper parts of body black while C. BOUVIERI has these parts reddish brown.

COLOBUS THOLLONI A. Milne-Edwards.

Colobus tholloni A. Milne-Edw., Rev. Scien., XIII, 1886, p. 15; Pousarg., Ann. Scien. Nat., III, 1896, pp. 150, 167.

Piliocolobus tholloni Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 110, pl. V.

Type locality. Congo. Type in Paris Museum.

Geogr. Distr. Left bank of the Congo; range unknown.

Genl. Char. Resembles C. FERRUGINEUS. but back not wholly black.

Color. Forehead with a narrow line of long black hairs extending on sides of face to ears; top of head brownish red; nape chestnut grading into blackish on hind neck and dorsal region to middle of back; sides of neck whitish; rest of upper parts, outer side of arms and thighs bright chestnut red; lateral line beneath the red deep orange; legs below knees paler red than thighs; under parts and inner side of limbs creamy white; tail for basal half like back, remainder purplish red, or maroon, blackish at tip; sides of head and jaws pale yellowish red. Ex type Paris Museum.

Measurements. Skull: occipito-nasal length, 90; Hensel, 74; zygomatic width, 74; intertemporal width, 40; median length of nasals, 17; length of upper molar series, 30; length of mandible, 78; length of lower molar series, 36. Ex type Paris Museum.

While allied to C. FERRUGINEUS, this species differs in its much brighter red on sides and limbs, and by having no black on lower back and limbs; the crown is brownish red, not black. It is a much brighter colored and handsomer animal than C. FERRUGINEUS.

COLOBUS TEMMINCKI Kuhl.

Colobus temmincki Kuhl, Beitr. Zool., 1820, p. 7; Desm., Mamm., 1820, p. 53; Ogilby, Proc. Zool. Soc. Lond., 1835, p. 99; Less., Spec. Mamm., 1840, p. 69; Martin, Mammif. Anim., 1841, p. 449.

TEMMINCK'S GUEREZA.

Type locality. Unknown. Type in Leyden Museum.

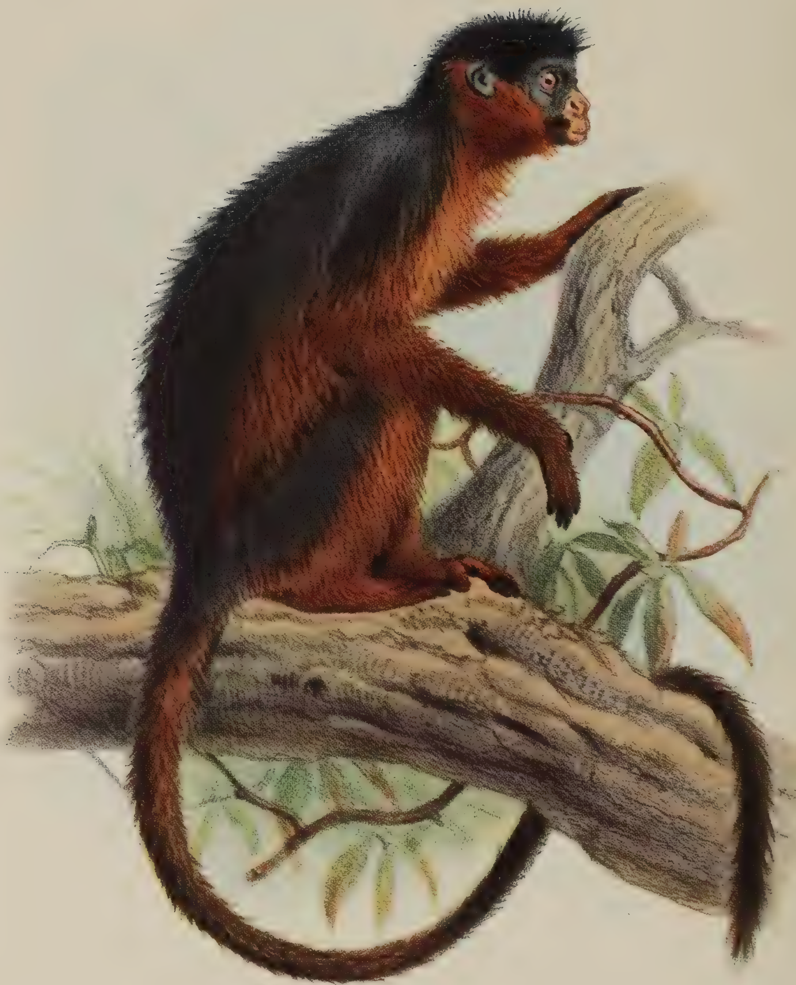
Color. Hairs of superciliary stripe long, black, and also a black stripe from eye to ear; top of head dark purplish red; back of head and neck extending on back to shoulders black; rest of upper parts and flanks dark grayish brown with a reddish tinge; shoulders and inner side of arms to elbows brownish gray, and thighs smoky gray; cheeks, fore parts of arms to elbow, outer side of forearms, hands, outer side of legs below knees, feet, and lower part of flanks orange red; chin, throat, under parts of body and inner side of limbs pale yellow; tail at root like back; entire rest of tail bright red.

Measurements. Total length, 1,496; tail, 956; foot. 150. No skull. Ex type Leyden Museum.

The following description of a specimen in the Berlin Museum seems to indicate a new form:

Type locality. Avakubi, west of Lake Albert. Specimens in Berlin Museum.

Genl. Char. Resembling somewhat both C. TEMMINCKI and C. THOLLONI. Size large, tail long.



Colobus ferrugineus

Color. Top and back of head chestnut red; superciliary line, cheeks and long hairs over ears black; back from nape to rump and flanks, black with red hairs mingling with black between shoulders; rump slaty gray with a strong reddish tinge; shoulders and arms to wrists bright red; thighs and legs to ankles slaty gray; inner side of limbs gray tinged with yellow; chin, throat and under parts of body brownish gray; hands, feet and tail, black; face black. Ex specimen Berlin Museum.

Measurements. Total length, 1,310; tail, 710; foot, 160. Skull: total length, 114.7; occipito-nasal length, 97.7; intertemporal width, 42.1; breadth of braincase, 60; Hensel, 77.7; zygomatic width, 89; median length of nasals, 17.5; palatal length, 39; length of upper molar series, 28.9; length of mandible, 80.8; length of lower molar series, 36.1. Ex specimen Berlin Museum.

Considerable variation is exhibited by this species in the color of its coat at different ages, as seen in the series of skins in the Berlin Museum, some being red on the upper part of back and neck, with the lower back and rump grayish; again in others the dorsal region from neck to middle of back is black, remaining parts on side bright red, with lower back, rump and flanks brownish red, and basal half of the tail same color. These variations occur in specimens from the same locality.

Colobus foai Pousargues.

Colobus foai Pousarg., Bull. Mus. Hist. Nat., Paris, 1899, p. 278.

Type locality. Country of the Ouroua, south west of Lake Tanganyika, Africa.

Geogr. Distr. Central Africa, between Lake Tanganyika and the Upper Congo, country of the Ouroua and Baloubas.

Color. Upright crest on forehead black or blackish chestnut; on front edge, the longer hairs behind red; top of head, and long hairs over ears above temples, hind neck, and back to rump black glossed with chestnut, becoming reddish on the sides of body; a patch of long reddish hairs in front; behind ears and sides of neck, beneath ears and throat, and under parts and inner side of limbs yellowish white; chin, and beneath lower jaw, arms and legs red; rump and thighs bright red; tail bright chestnut red for basal third; remainder maroon. Ex type Paris Museum.

The unique type in the Paris Museum was a flat skin and lacked the hands and feet and these were supplied when the specimen was mounted by hands and feet taken from a skin of Colobus ferru-

GINEUS. The color of these members therefore in this species is not known.

COLOBUS GRAUERI Dollman.

Colobus graueri Dollman, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 473.

Type locality. Wabembeland, 80 kilometres west of north end of Lake Tanganyika. Type in British Museum.

Color. Superciliary line of long hairs extending backwards from above eyes to ears in a broad band, black; top of head crested, ferruginous; back of head chestnut; back of neck and upper back including shoulders, black and chestnut mixed; rest of back to tail and flanks, rather bright chestnut; outer side of arms cinnamon red; hands mixed cinnamon red and black, becoming nearly entirely black on fingers; legs paler cinnamon red than arms; feet cinnamon red and black mixed; cheeks and sides of head ferruginous; chin, throat, under parts of body, and inner side of limbs smoke gray; tail maroon red becoming dark maroon at tip; ears black. Ex type British Museum.

Measurements. Total length, 1,350; tail, 700; foot, 180. Skull: total length, 117.1; occipito-nasal length, 99; interorbital width, 43.1; breadth of braincase, 58.1; Hensel, 39.3; zygomatic width, 88.2; palatal length, 42.7; median length of nasals, 17.9; length of upper canine, 21.2; length of upper molar series, 18.9; length of mandible, 85; length of lower molar series, 35.9. Ex type British Museum.

A young male differs from the above old adult male in having the back from neck to rump jet black; rump brownish red; hind legs brownish red like rump; back of neck black; tail brownish red, tip black.

This form is quite close to C. FOAI, but differs in the under parts and inner side of limbs being smoky gray instead of yellowish white, and in the legs being pale cinnamon red instead of a bright red.

COLOBUS OUSTALETI Trouessart.

Colobus oustaleti Trouess., Bull. Mus. Hist. Nat., Paris, 1906, p. 443.

OUSTALET'S GUEREZA.

Type locality. Youmba country, Oubangui, Congo.

Genl. Char. Size large; color nearly uniform, dull; tail long.

Color. Top of head to middle of back blackish brown, rest of upper parts and limbs paler brown; sides of head fuscous; throat, and under parts pale grayish brown; hands and feet brownish black; tail at root color of back; remainder black. Ex type in Paris Museum.

Measurements. Total length, 1,346.2; tail, 711.2; foot, 165.1. Skull: total length, 112; Hensel, 77; occipito-nasal length, 91; zygomatic width, arch broken; intertemporal width, 42; breadth of braincase, 57; median length of nasals, 12; length of upper molar series, 29; length of mandible, 76; length of lower molar series, 36. Ex type Paris Museum.

This is a plainly colored Guereza, being of an almost uniform brown, darkest on head and upper parts of body. There are no tufts nor hairy crests, and in its peculiar coloration the species is unique in the genus.

Subgenus Piliocolobus.

Ears not tufted, upper parts and legs sometimes black.

COLOBUS FERRUGINEUS (Shaw).

Simia ferruginea Shaw, Gen. Zool., I, 1800, p. 59; Desm., Mamm., 1820, p. 53; Fisch., Syn. Mamm., 1829, p. 13.

Colobus ferrugineus Illig., Prodr. Syst. Mamm., 1811, p. 69; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 15, 8me Leçon; Less., Spec. Mamm., 1840, p. 68; Gerv., Hist. Nat. Mamm., I, 1854, p. 66; Reichenb., Vollständ. Naturg. Affen, 1862, p. 86, figs. 191, 192; Gray, Proc. Zool. Soc. Lond., 1868, p. 161; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 27; Sclat., Proc. Zool. Soc. Lond., 1890, p. 590, pl. XLVIII; Forbes, Handb. Primates, 1894, p. 91; Pousarg., Ann. Scien. Nat., Paris, III, 7me Sér., 1896, p. 162; Johnston, Proc. Zool. Soc. Lond., 1905, p. 199.

Colobus ferruginosus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 92; Ogilby, Menagerie, 1838, p. 267; Martin, Mammif. Anim., 1841, p. 498.

Colobus rufo-fuliginosus Ogilby, Libr. Entert. Knowl., 1838, p. 270; Pousarg., Ann. Scien. Nat., III, 7me Leçon, 1896, p. 163.

Colobus ferruginea (!) Less., Spec. Mamm., 1840, p. 68; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 18.

Piliocolobus ferrugineus Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 105, pl. CXI. (Part.).

BAY GUEREZA.

Type locality. "Sierra Leone"?

Geogr. Distr. Liberia, (Johnston). West Africa.

Color. Top of head, back of neck, upper parts of body, shoulders and arms to elbows, and thighs, (except front), and to knees jet black; cheeks dark bay overlaid with long black hairs; forearms and hands, front of thighs to knees, legs and feet, throat, and under parts of body bright bay; tail at root black, hairs on remaining portion dark bay at base and tipped with black, causing it to appear black tinged with maroon.

Measurements. Total length, 1,260; tail, 700; foot, 165. Skull: total length, 101; occipito-nasal length, 81; Hensel, 72; intertemporal width, 41; zygomatic width, 73; palatal length, 41; median length of nasals, 12; length of upper molar series, 29; length of mandible, 68; length of lower molar series, 35. Ex specimen Leyden Museum.

COLOBUS FULIGINOSUS Ogilby.

Colobus fuliginosus Ogilby, Proc. Zool. Soc. Lond., 1835, p. 97; *Id.* Libr. Entert. Knowl., Menag., 1838, p. 270; Less., Spec. Mamm., 1840, p. 69; I. Geoff., Cat. Primates, 1851, p. 17; Temm., Esquis. Guin., 1853, p. 24; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 95; Pousarg., Ann. Scien. Nat., 1895, p. 259; *Id.* III, 7me Sér., 1896, p. 163.

Colobus rufo-fuliginosus Ogilby, Libr. Entert. Knowl., 1838, p. 270; Pousarg., Ann. Scien. Nat., III, 7me Sér., 1896, p. 168.

Colobus ferrugineus (nec Shaw), Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 105, pl. III.

FULIGINOUS GUEREZA.

Type locality. Gambia. Type not now in British Museum.

Geogr. Distr. Gambia, West Africa. Range unknown.

Color. Front of head and upper part of back black; back of head and neck dark mars brown; rump, flanks, arms to elbows, and thighs smoky gray, passing gradually into the black of the back; sides of face, arms below elbows, legs below knees, hands and feet, tawny; under parts dirty yellowish gray; tail smoky gray at base, then brownish yellow, apical portion pale maroon.

Measurements. Total length, 1,265; tail, 715. Ex specimen Berlin Museum.

The above description was taken from a specimen in the Berlin Museum. The type was in the Museum of the Zoological Society of London, but seems to have disappeared. The description differs slightly from that of the type which reads as follows: "The Society's specimen measures two feet five inches from the upper lip to the origin of the tail, which organ is itself two feet eight inches in length. All the upper parts of the body are of a light smoky blue, very similar to that of the common Mangabey (*Cercopithecus fuliginosus*), rather darker on the shoulders than elsewhere and copiously tinged with red on the occiput; the color of the back descends some way down on the external face of the forearms and thighs, and also a short distance but more obscure, on the upper surface of the tail. With these exceptions, all the rest of the extremities, the arms, forearms, thighs, legs, hands, feet and tail, are of a uniform light or brick red, and a more intense shade of the same color extends up the forepart of the shoulders and spreads over the breast, throat and whiskers, which latter are long, directed downwards on the cheeks, and backwards into long pointed tufts behind the ears, which are small, round, naked, and furnished with a distinct *helox,* in all respects like that of the human subject. The belly and flanks are of a dirty yellowish white, and a circle of black stiff hairs passes over the eyes. The face, palms of the hands and soles of the feet are naked and of a violet color; the callosities are of moderate size." In the Library of Entertaining Knowledge, Menageries, 1838, Ogilby, (as the Author of the article is presumed to be, the book and the text being anonymous), gives a wood cut figure, useless for identification, of this species under the name of *rufo-fuliginosus,* for as the writer naïvely says, "the epithet *rufo-fuliginosus* more accurately expresses the colors of the animal, and contains within itself a short, but very accurate definition of the species; and as it has since been ascertained to be identical with the animal there described as *Colobus temmincki,* we have determined to suppress both the specific names there given, and to substitute that here proposed in order *to avoid the confusion which might otherwise attend the double synonym.*" The italics are mine, and if there is any better way to create confusion in nomenclature than by the way here adopted, I do not know it. As regards the species which is compared in the above extract, it may be said that C. TEMMINCKI appears to be distinct. The color of the "front of head and upper part of back *light smoky blue,*" is entirely unlike the species compared *Cercopithecus* (*Cercocebus*) *fuliginosus* = CERCOCEBUS ÆTHIOPS Schreb., which has the head speckled yellow and brownish black, and upper parts sooty black, and there is known to me no species whose upper parts are "light smoky blue." Its relation to C. TEMMINCKI is closer, but the color of the head and upper parts quite different. It may be that Ogilby's type was a young animal which had not acquired the full depth of coloring exhibited by the adult, but as that is impossible to prove at present, the type having been lost, it seems better not to unite it with C. TEMMINCKI, regardless of Ogilby's statement, and await the arrival of sufficient material, by which, any doubts now existing can be satisfactorily removed.

COLOBUS RUFO-NIGER Ogilby.

Colobus rufo-niger Ogilby, Libr. of Entert. Knowl. Menag., 1838, p. 273; Martin, Mammif. Anim., 1841, p. 500; Gray, Proc. Zool. Soc. Lond., 1868, p. 181.

Colobus fuliginosus var. *rufo-niger* Pousarg., Ann. Scien. Nat., III, 7me Sér., 1896, p. 165; I, 8me Sér., 1896, p. 258.

Type locality. Sierra Leone. Type in British Museum.

Geogr. Distr. South Sierra Leone; Liberia. West Africa.

Color. Forehead, top of head, neck, and upper parts of body, arms to elbows, and thighs black; some white hairs on shoulders and upper part of thighs; sides of head to corner of mouth and extending upward behind ears, sides of neck, chin, back of ears, throat, forearms, legs from the knees, flanks, inner side of limbs, and under parts dark ferruginous; tail black at base and on apical third, rest dark maroon and black mixed. Ex type British Museum.

This species was formerly united to C. TEMMINCKI Kuhl, but is quite distinct from it. The specimen described is in the Collection of the British Museum and was Ogilby's type of the species. It is imperfect, a flat skin, lacking the hands and feet. Another specimen, however, No. 4. 6. 2. 2. is complete, and shows that the hands and feet are of the same color as the forearms and legs from the knees. It is evidently very distinct from C. FERRUGINEUS Shaw, with which it has been connected by some writers, Shaw's species having the back "deep bay color, and outer side of limbs black."

COLOBUS PENNANTI Waterhouse.

Colobus pennanti Waterh., Proc. Zool. Soc. Lond., 1838, p. 57; Martin, Mammif. Anim., 1841, p. 501; I. Geoff., Dict. Hist. Nat., IV, 1849, p. 209; Gray, Proc. Zool. Soc. Lond., 1868, p. 181, var. 2; Pousarg., Ann. Scien. Nat., III, 7me Sér., 1896, pp. 157, 166; I, 8me Sér., 1896, p. 260.

PENNANT'S GUEREZA.

Type locality. Island of Fernando Po. Type in British Museum.

Geogr. Distr. Gaboon to Island of Fernando Po, West Africa.

Color. Top of head, neck, shoulders and back black; upper part of thighs and arms reddish brown; cheeks and throat whitish; sides of body, arms, outer part of thighs and outer side of legs bright rusty red; forepart of shoulders, under parts of body and inner side of limbs pale yellow; tail dark maroon and black. Ex type British Museum.

Measurements. Total length, 1,421.8; tail, 736.

Mr. Waterhouse had two imperfect flat skins when he described this species and they are still in the British Museum Collection. The feet and hands are missing, so I am unable to give a description of them. This species is very distinct from C. RUFO-NIGER with which some writers have confounded it. The back is not so black, the cheeks and throat are white and the red is altogether of another color, and the arms and legs are of a very different hue. It appears to be a rare species in collections, as I have not seen a complete specimen anywhere.

COLOBUS GODONORUM Matschie.

Colobus godonorum Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1900, p. 186.

Type locality. Udschungwe Berge, German East Africa. Type in Berlin Museum.

Geogr. Distr. German East Africa.

Color. Top and back of head dark ferruginous; side of head before ears, upper part of back, shoulders, arms and outer side of arms and thighs, and flanks black, the hair slate color at base then black; lower part of back, the hairs are reddish at base then black, the basal color giving a reddish tint to lower back and rump; sides of head and ears, throat, entire under parts and inner side of limbs white; tail at root black, mixed with red hairs, rest of the upper part black, beneath yellowish white. Ex type Berlin Museum.

The type is without the forepart of head, hands, feet and most of the tail, only a short piece from root remaining, so no measurements can be given. No skull obtained.

The mutilated skin of the type and a mutilated flat skin as stated above are all that have been procured of this form. It is nearest to C. KIRKI, but differs in the lower part of back being black instead of red.

Subgenus Stachycolobus.

Upper parts and legs always black.

Colobus satanas Waterhouse.

Colobus satanas Waterh., Proc. Zool. Soc. Lond., 1838, p. 58; Martin, Mammif. Anim., 1841, p. 497; I. Geoff., Dict. Hist. Nat., 1849, p. 208; Gerv., Hist. Nat. Mamm., 1854, p. 65; Sclat., Proc. Zool. Soc. Lond., 1860, p. 246; Reichenb., Vollständ. Naturg. Affen, 1862, p. 88, fig. 197; Gray, Proc. Zool. Soc. Lond., 1868, p. 181; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 17; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 27; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 226; 1893, p. 176; Forbes, Handb. Primates, II, 1894, p. 93; Pousarg., Ann. Scien. Nat. Paris, III, 7me Sér., 1896, p. 149; Thos., Proc. Zool. Soc. Lond., 1904, p. 185; Lydekk., Proc. Zool. Soc. Lond., 1905, p. 325, fig. 54.

Semnopithecus anthracinus Le Conte, Proc. Acad. Nat. Scien. Phila., 1857, p. 10.

Guereza satanas Trouess., Comp. Mamm., 1879, p. 10.

Stachycolobus satanas Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 114, pl. VII.

BLACK GUEREZA.

Type locality. Island of Fernando Po.

Geogr. Distr. Senegambia; Sierra Leone; Island of Fernando Po; Gaboon and the Congo; West Africa.

Genl. Char. Hair long, coarse, hairs on forehead erect, long; those on cheeks directed backwards; hairs on tail short; tip without tuft.

Color. Entirely and uniformly black; head, body, limbs and tail.

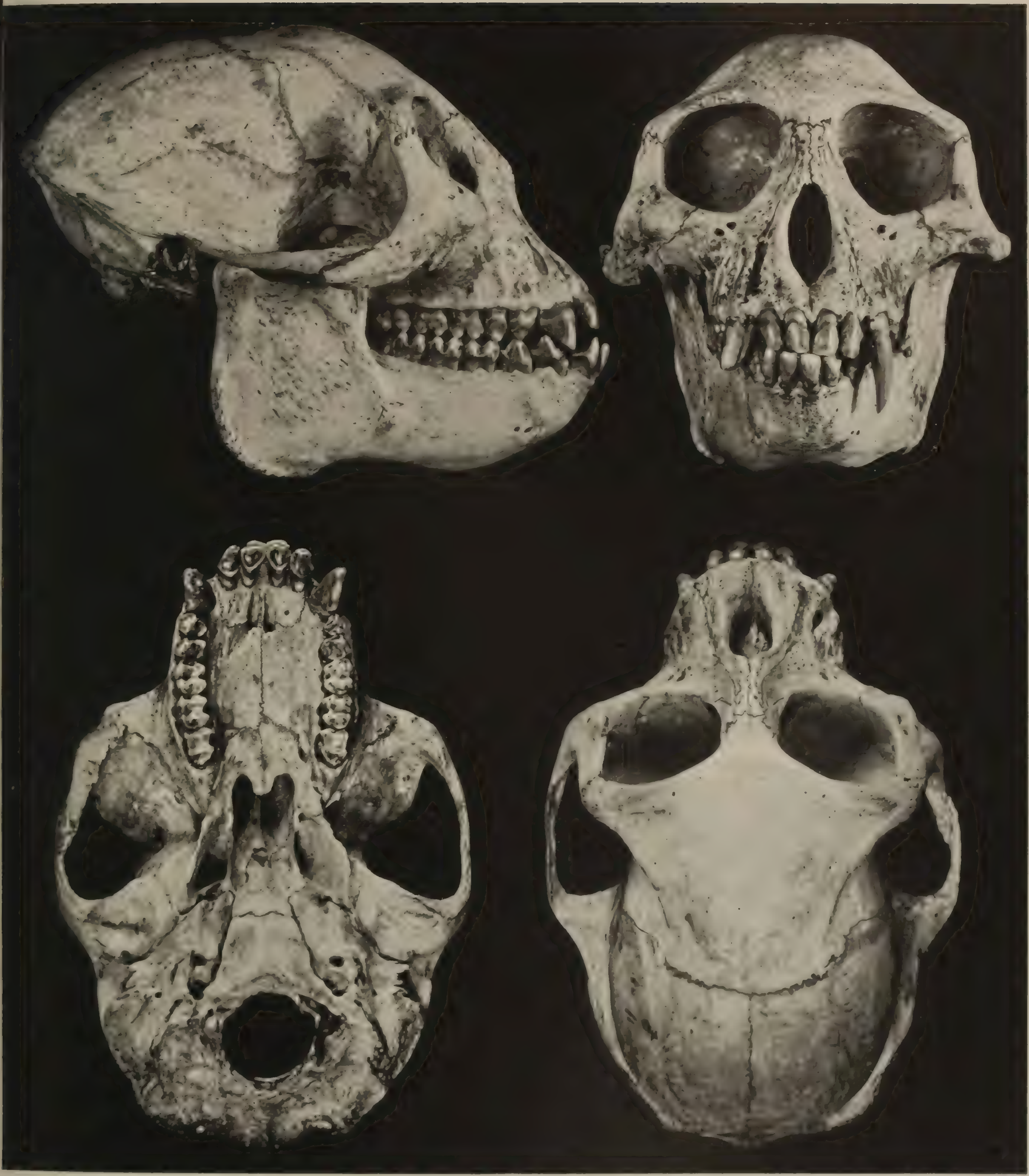
Measurements. Skull: total length, 111; occipito-nasal length, 96; Hensel, 82; zygomatic width, 81; intertemporal width, 45; palatal length, 44; median length of nasals, 13; length of upper molar series, 30; length of mandible, 77; length of lower molar series, 35.

Colobus ruwenzorii Thomas.

Colobus ruwenzorii Thos., Proc. Zool. Soc. Lond., 1901, p. 85; Lydekk., Proc. Zool. Soc. Lond., 1905, p. 326.

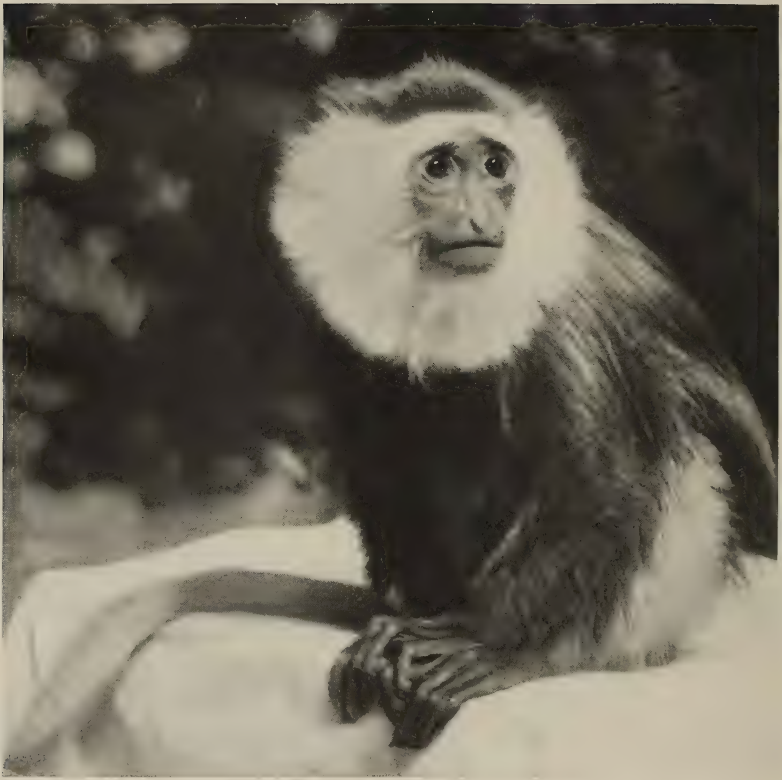
Type locality. Buamba country, northwest flank of Mt. Ruwenzori, Uganda. Type in British Museum.

Geogr. Distr. Uganda; East Africa.



COLOBUS SATANAS.

No. 1.11.21.1. Brit. Mus. Coll. 4/5 Nat. Size.



Colobus vellerosus.

Genl. Char. Similar to C. PALLIATUS; fur on back very long and wavy, "resembling that of Angora goat." White cheek tufts long and bushy, tail without apical tuft.

Color. Narrow band on forehead, sides of head, throat, long hairs of mantle from shoulders to middle of back, and anal region white; entire rest of pelage black; tail black; tip alone white. Ex type British Museum.

Measurements. Skull: none in Collection.

COLOBUS VELLEROSUS (I. Geoffroy).

Semnopithecus vellerosus I. Geoff., Bélang., Voy., Mamm., 1834, p. 37.

Semnopithecus bicolor Wesmael, Bull. Acad. Scien. Brux., II, 1835, p. 236.

Colobus leucomeros Ogilby, Proc. Zool. Soc. Lond., 1837, p. 69; Less., Spec. Mamm., 1840, p. 70; Martin, Mammif. Anim., 1841, p. 497.

Colobus vellerosus I. Geoff., Dict. Hist. Nat., IV, 1849, p. 116; *Id.* Cat. Primates, 1851, p. 17; Gerv., Hist. Nat. Mamm., I, 1854, p. 65; Sclat., Proc. Zool. Soc. Lond., 1860, p. 246; Reichenb., Vollständ. Naturg. Affen, 1862, p. 87, fig. 193; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 226; 1893, p. 175; Forbes, Handb. Primates, II, 1894, p. 94; Bedd., Proc. Zool. Soc. Lond., 1903, p. 16, (Brain); Lydekk., Proc. Zool. Soc. Lond., 1905, p. 329, fig. 58.

Colobus ursinus Temm., Esquis. Zool. Guin., 1853, p. 21. (Part.).

Colobus bicolor Gray, Proc. Zool. Soc. Lond., 1868, p. 181; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 18; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 26; Rochebr., Faun. Sénégamb., Suppl. Vert., 1885, p. 24.

Guereza vellerosa Trouess., Comp. Mamm., 1879, p. 10.

Pterycolobus vellerosus Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 125, pl. X.

WHITE-THROATED GUEREZA.

Type locality. West coast of Africa; locality unknown. *Type in Paris Museum.

Geogr. Distr. Gold Coast to Senegambia, West Africa.

Genl. Char. Recognizable from the other species by the white thighs.

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*Flat skin without hands.

Color. Broad band on forehead, sides of head covering the ears, and extending downward including chin and throat, and thighs from anal region to knees white; rest of pelage, top of head, nape, body above and below, arms and hands, legs from below knees, inner side of thighs and feet black; tail black at base, remainder white. Ex specimen British Museum.

Measurements. Total length, 1,543; tail, 914.4; foot, 171.4. Skull: total length, 116; occipito-nasal length, 102; zygomatic width, 81; intertemporal width, 40; median length of nasals, 19; length of upper molar series, 33; length of mandible, 84; length of lower molar series, 38. Ex specimen Berlin Museum.

COLOBUS POLYCOMUS (Schreber).

Simia polycomos Schreb., Säugth., 1775, pl. XD. (nec desc.).

Simia (Cercopithecus) regalis Kerr, Anim. Kingd., 1792, No. 61.

Simia comosa Shaw, Genl. Zool., I, 1800, p. 59.

Colobus polycomus Illig., Prodr. Syst. Mamm. et Av., 1811, p. 69; E. Geoff., Cours Hist. Nat., 1828, p. 14, 8me Leçon; Less., Spec. Mamm., 1840, p. 67; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 108; V, 1855, p. 36; Reichenb., Vollständ. Naturg. Affen, 1862, p. 82, fig. 194; Gray, Proc. Zool. Soc. Lond., 1868, p. 181; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 1; Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 117, pl. VIII; Matschie, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1892, p. 227.

Colobus ursinus Ogilby, Proc. Zool. Soc. Lond., 1835, p. 98; Less., Spec. Mamm., 1840, p. 70; Martin, Mammif. Anim., 1841, p. 495; Fras., Zool. Typ., 1849, pl. I; I. Geoff., Dict. Hist. Nat., IV, 1849, p. 208; Sclat., Proc. Zool. Soc. Lond., 1860, p. 245; Reichenb., Vollständ. Naturg. Affen, 1862, p. 86, fig. 197; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 24; Forbes, Handb. Primates, II, 1894, p. 93; Johnst., Proc. Zool. Soc. Lond., 1905, p. 199.

Semnopithecus (Colobus) polycomos Wagn., Schreb., Säugth. Suppl., I, 1840, p. 108.

Guereza ursina Trouess., Consp. Mamm., 1879, p. 10.

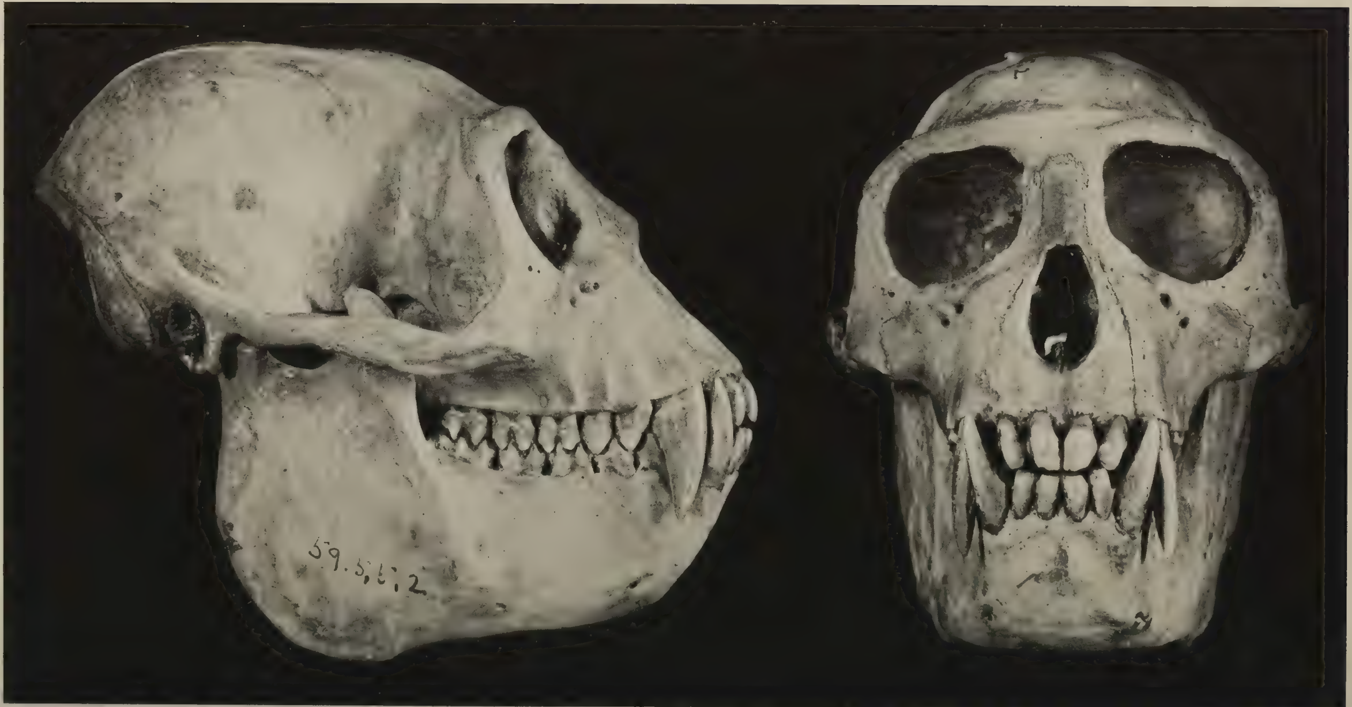
URSINE GUEREZA.

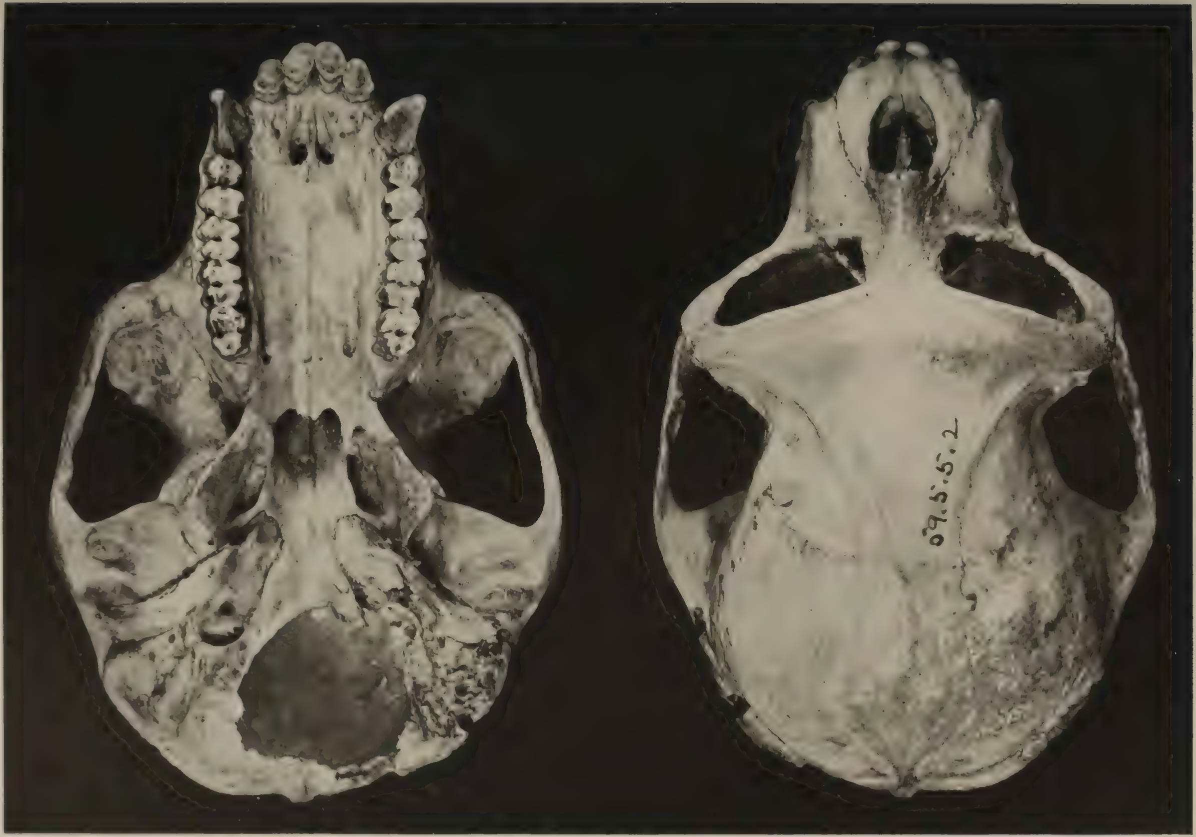
Type locality. Unknown.

Geogr. Distr. Sierra Leone; Liberia (Johnston), West Africa.

Genl. Char. Allied to C. VELLEROSUS, but tail white from the root.

Color. Front and sides of head, extending behind ears, cheeks,


59.5.5.2



COLOBUS POLYCOMUS.

No. 59.5.5.2. Brit. Mus. Coll. 4/5 Nat. Size.

long hairs falling over shoulders, and throat white; entire rest of pelage, top and back of head, hind neck, body above and beneath, limbs, hands and feet black; tail pure white for its entire length.

Measurements. Total length, 1,638.3; tail, 685.8; foot, 207.4. Skull: total length, 116; occipito-nasal length, 93; intertemporal width, 43; zygomatic width, 83; palatal length, 44; median length of nasals, 15; length of upper molar series, 31; length of mandible, 85; length of lower molar series, 37.

While Schreber does not describe this monkey, yet as his plate shows a figure, though exaggerated, with a tail *white* for its entire length, it is best to retain his name, for this species is the only one with a tail colored in such manner.

COLOBUS PALLIATUS Peters.

Colobus palliatus Peters, Monatsb. K. Preuss. Akad. Wiss., Berl., 1868, p. 637; 1879, p. 830, pl. IV A; Gray, Ann. Mag. Nat. Hist., III, 4th Ser., 1869, p. 171; Sclat., Proc. Zool. Soc. Lond., 1880, p. 68; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 227; Pousarg., Ann. Scien. Nat., 1896, 7me Sér., III, p. 146; 8me Sér., p. 262, fig. 5; Lydekk., Proc. Zool. Soc. Lond., 1905, p. 326, fig. 55.

Type locality. German East Africa, opposite Zanzibar. Type in Berlin Museum.

Geogr. Distr. Kondé, north of Lake Nyassa, German East Africa; Bagamoyo; Ousambara district north bank of the Pangani.

Genl. Char. Differs from C. ANGOLENSIS Sclat., in having a white frontal band.

Color. A band across forehead extending over the temples and under the ears to sides of neck, throat to breast and long hairs of mantle over shoulders white; head, body above and beneath, limbs, hands and feet, jet black; tail black on basal three fourths grading into white for the remainder of the length. Ex type Berlin Museum.

Measurements. Skull: total length, 106; occipito-nasal length, 86; Hensel, 77; zygomatic width, 77; intertemporal width, 40; palatal length, 44; median length of nasals, 10; length of upper molar series, 30. Ex type Berlin Museum.

This species resembles C. ANGOLENSIS in all respects except that it has a narrow white band across the forehead, and the white of the throat extends farther down, reaching the chest.

Colobus sharpei Thomas.

Colobus angolensis Sclat., Proc. Zool. Soc. Lond., 1892, p. 97. (nec Sclat., 1860).

Colobus palliatus (nec Peters), Pousarg., Ann. Scien. Nat., 1895, p. 269, fig. 5; Thos., Proc. Zool. Soc. Lond., 1896, p. 788; 1897, p. 927.

Colobus sharpei Thos., Proc. Zool. Soc. Lond., 1902, p. 118; Lydekk., Proc. Zool. Soc. Lond., 1905, pp. 326, 327, fig. 50.

Colobus cottoni Lydekk., Ann. Mag. Nat. Hist., XVI, 7th Ser., 1906, p. 432.

SHARPE'S GUEREZA.

Type locality. Fort Hill, Nyassa-Tanganyika Plateau. Type in British Museum.

Geogr. Distr. Nyassaland to Tanganyika Plateau. Ituri forest, East Congo.

Genl. Char. Similar to C. PALLIATUS in color, but cranial differences considerable. Skull is larger in all dimensions; frontal region more convex; nasals longer, broader, and more acute posteriorly; zygomatic arches greatly divergent posteriorly; front edge of coronoid process angularly convex.

Color. Practically exactly like C. PALLIATUS, but of a larger size. Frontal band, sides of head, neck, throat to chest, and long hairs of mantle white, all the rest of the pelage black; tail black for two thirds its length grading into white on the remaining third. Flat skin. Ex type British Museum.

Measurements. Total length, about 1,440; tail, 760; foot, 190. Ex stuffed specimen not the type. Skull: total length, 114; occipitonasal length, 95; Hensel, 87; zygomatic width, 84; intertemporal width, 43; palatal length, 49; median length of nasals, 16; length of upper molar series, 32; length of mandible, 90; length of lower molar series, 39. Ex type British Museum.

I place as a synonym of this species *C. cottoni* Lydekker, the type of which is in the British Museum. There is no difference perceptible in the color of the pelage, *C. cottoni* is a male, and C. SHARPEI a female, so the skulls may not be compared, as such differences as are observable may be only those caused by sex. The right that *C. cottoni* may have to a distinctive rank can only be establishel by cranial characters proved to exist. As this cannot at present be shown and there are no differences in the color of the skins, the animals are considered as representing one and the same species.

COLOBUS ANGOLENSIS Sclater.

Colobus angolensis Sclat., Proc. Zool. Soc. Lond., 1860, pp. 245, 246; Reichenb., Vollständ. Naturg. Affen, 1862, p. 88, no fig.; Gray, Proc. Zool. Soc. Lond., 1868, p. 181; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 18; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 24; Sclat., Proc. Zool. Soc. Lond., 1880, p. 68; 1892, p. 97; Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 119; Bocage, Jorn. Sc. Lisb., 1889, p. 9; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 226; Forbes, Handb. Primates, II, 1894, p. 96; Pousarg., Ann. Scien. Nat., 7me Sér., 1896, p. 146; I, 8me Sér., 1896, pp. 267, 271, fig. 65.

Guereza angolensis Trouess., Cours Mamm., 1879, p. 10.

ANGOLAN GUEREZA.

Type locality. Angola, West Africa. Type in British Museum.

Geogr. Distr. Mouata-Yamvo country watered by the Kassai, left bank of Congo to Angola; West Africa.

Genl. Char. Hair on head short; tail tufted; white spot between legs.

Color. Band over eyes, temples, sides of face in front of ears, long hairs of mantle, throat and apical half of tail white; rest of head, body above and beneath, limbs, hands, feet and basal half of tail black. Ex type British Museum. Flat skin, and perfect specimen from Bongandango, Congo, in British Museum.

Measurements. Skull: total length, 104-118; occipito-nasal length, 85-86; intertemporal width, 41-45; Hensel, 71-78; zygomatic width, 78; median length of nasals, 10-12; palatal length, 47; length of upper molar series, 30-31; length of mandible, 72-79; length of lower molar series, 30.

Like *C. palliatus,* but without the frontal band, and the white on throat more restricted.

COLOBUS ABYSSINICUS Oken.

Colobus abyssinicus Oken, Lehrb. Zool., III, 1816, Pt. II, p. 1182; Thos., Proc. Zool. Soc. Lond., 1900, p. 800, (note).

Colobus guereza Rüpp., Neue Wirbelth. Säugth., 1835, p. 1, pl. I; Less., Spec. Mamm., 1840, p. 68; Martin, Mammif. Anim., 1841, p. 494; I. Geoff., Dict. Hist. Nat., IV, 1849, p. 117; *Id.* Cat. Primates, 1851, p. 17; Temm., Esquis. Zool. Guin., 1853, p. 23; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 95; Sclat., Proc. Zool. Soc. Lond., 1860, p. 246; Reichenb., Vollständ. Naturg. Affen, 1862, p. 86, figs. 195, 196; Gray, Proc. Zool. Soc. Lond., 1868, p. 182; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 25; Heugl., Reise Nord Afr., II, 1877, p. 1; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 55; Thos., Proc. Zool. Soc. Lond., 1885, p. 219; 1888, p. 5; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 225; 1893, p. 176; Forbes, Handb. Primates, II, 1894, p. 97; Pousarg., Ann. Scien. Nat., 7me Sér., III, 1896, p. 146; Bedd., Proc. Zool. Soc. Lond., 1903, p. 17, figs. 5, 6, (Brain); Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 574, fig. XC, Zool. Ser.

Guereza rüppelli Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 19; Rochebr., Faun. Sénégamb., I, Mamm., 1885, p. 25; Suppl., 1887, p. 129, pl. XI.

Guereza guereza Trouess., Consp. Mamm., 1879, p. 10.

ABYSSINIA GUEREZA.

Type locality. Abyssinia.

Geogr. Distr. Niam-niam, Soudan, (Schweinfurth); Kilimanjaro; right bank of the Oubanqui, Province of Godam and Kulla, south and west Abyssinia, (Rüppell); German West Africa.

Genl. Char. Face covered with short grayish white hairs; nose, upper lip and ears black.

Color. Broad line on forehead, sides of face and neck, chin, throat, long hairs of mantle, and lower parts of back white; head, upper back between the long white fringe, under part of body, limbs, hands and feet black; tail with end tufted; basal half black, rest white. Ex co-type British Museum. Purchased from Rüppell.

Measurements. Skull: total length, 117; occipito-nasal length, 92; Hensel, 88; intertemporal width, 40; zygomatic arches broken; palatal length, 47; length of nasals, 10; length of upper molar series, 32; length of mandible, 91; length of lower molar series, 42. Ex co-type in British Museum.

COLOBUS OCCIDENTALIS Rochebrune.

Colobus abyssinicus occidentalis Rochebr., Faun. Sénégamb., Suppl. 1887, p. 140, pl. XIII; Thos., Proc. Zool. Soc. Lond., 1901, p. 86.

Colobus guereza Pousarg., Ann. Scien. Nat., III, 1897, p. 144, (nec Rüpp.); Sclat., Proc. Zool. Soc. Lond., 1898, p. 587, (Nigeria).

Colobus matschie Neum., Sitzungsb. Ges. Naturf. Freunde, Berlin, 1899, p. 15.

WESTERN GUEREZA.

Type locality. Noki? Lower Congo. Type not found.

Geogr. Distr. Upper and Lower Congo; Nigeria to Lake Chad; Western and Central Africa; Uganda; Victoria Nyanza; East Africa.

Genl. Char. Tail with a large tuft occupying about one third the apical portion, and composed of long white hairs; white on sides of face extending to top of ears; long white hairs of mantle thinly distributed.

Color. Rather broad band across forehead, sides of face to top of ears, the hairs rather long and almost covering the ears, chin and throat to breast, long hairs of mantle extending from the shoulders to the tail, and space around the root of tail extending between the thighs beneath, white; remainder of head, body above and beneath, limbs, hands and feet black; tail black for two thirds its length, apical portion white, covered by a large thick brush, too large to be termed a *tuft*, and composed of long flowing hairs. Ex Berlin Museum specimen.

Measurements. Total length about 1,200; tail, 600, (skin). Skull: total length, 122; occipito-nasal length, 99; Hensel, 93; zygomatic width, 83; intertemporal width, 47; palatal length, 52; median length of nasals, 11; length of upper molar series, 32; length of mandible, 84; length of lower molar series, 41. Ex Berlin Museum specimen.

The type of C. MATSCHIE in the Berlin Museum was examined and no difference could be perceived between it and the present species. It is claimed that the white tuft is smaller, but in the type it is one third the length of the tail, just what Rochebrune says is the length of the tuft in C. OCCIDENTALIS. There is no difference in the skulls.

COLOBUS POLIURUS Thomas.

Colobus abyssinicus poliurus Thos., Proc. Zool. Soc. Lond., 1900, p. 800; 1902, p. 308.

GRAYISH-WHITE-TAILED GUEREZA.

Type locality. Omo River, north of Lake Rudolph, East Africa. Type in British Museum.

Geogr. Distr. Range undetermined. Dodgit, W. Shoa. Abyssinia, (Thomas).

Genl. Char. Basal two thirds of tail grayish white, otherwise similar to C. ABYSSINICUS; mantle less developed.

Color. Band across forehead, sides of head extending to the neck, chin and throat to breast, long hair of mantle from shoulders to tail, lower part of back, and anal region white; rest of pelage everywhere black; tail, basal half grayish white, rest white with yellowish tinge; face and nose covered with short white hairs. Ex type British Museum.

Measurements. Skull: total length, 111; occipito-nasal length, 91; Hensel, 83; intertemporal width, 39; zygomatic width, 73; palatal length, 46; median length of nasals, 13; length of upper molar series, 31; length of mandible, 82; length of lower molar series, 39. Ex type British Museum.

COLOBUS CAUDATUS Thomas.

Colobus guereza caudatus Thos., Proc. Zool. Soc. Lond., 1885, p. 219, pl. XII; Johnst., Kilimanj. Exped., pp. 388, 389, fig. 72; Matschie, Sitzungsb. Ges. Natur. Freunde, Berlin, 1892, p. 225; Forbes, Handb. Primates, II, 1894, p. 99.

Guereza caudatus Rochebr., Faun. Sénégamb., Suppl. Vert., 1887, p. 136, pl. XII.

Colobus caudatus Forbes, Handb. Primates, II, 1895, p. 98, pl. XXV; Scott Elliot, Proc. Zool. Soc. Lond., 1895, p. 341; Thos., Proc. Zool. Soc. Lond., 1900, p. 174; Lydekk., Proc. Zool. Soc. Lond., 1900, p. 174; 1905, p. 328, fig. 57; Allen, Bull. Am. Mus. Nat. Hist., N. Y., 1909, p. 175.

Colobus abyssinicus kikuyuensis Lönnb., Ann. Mag. Nat. Hist., 8th Ser., IX, 1912, p. 63.

WHITE-TAILED GUEREZA.

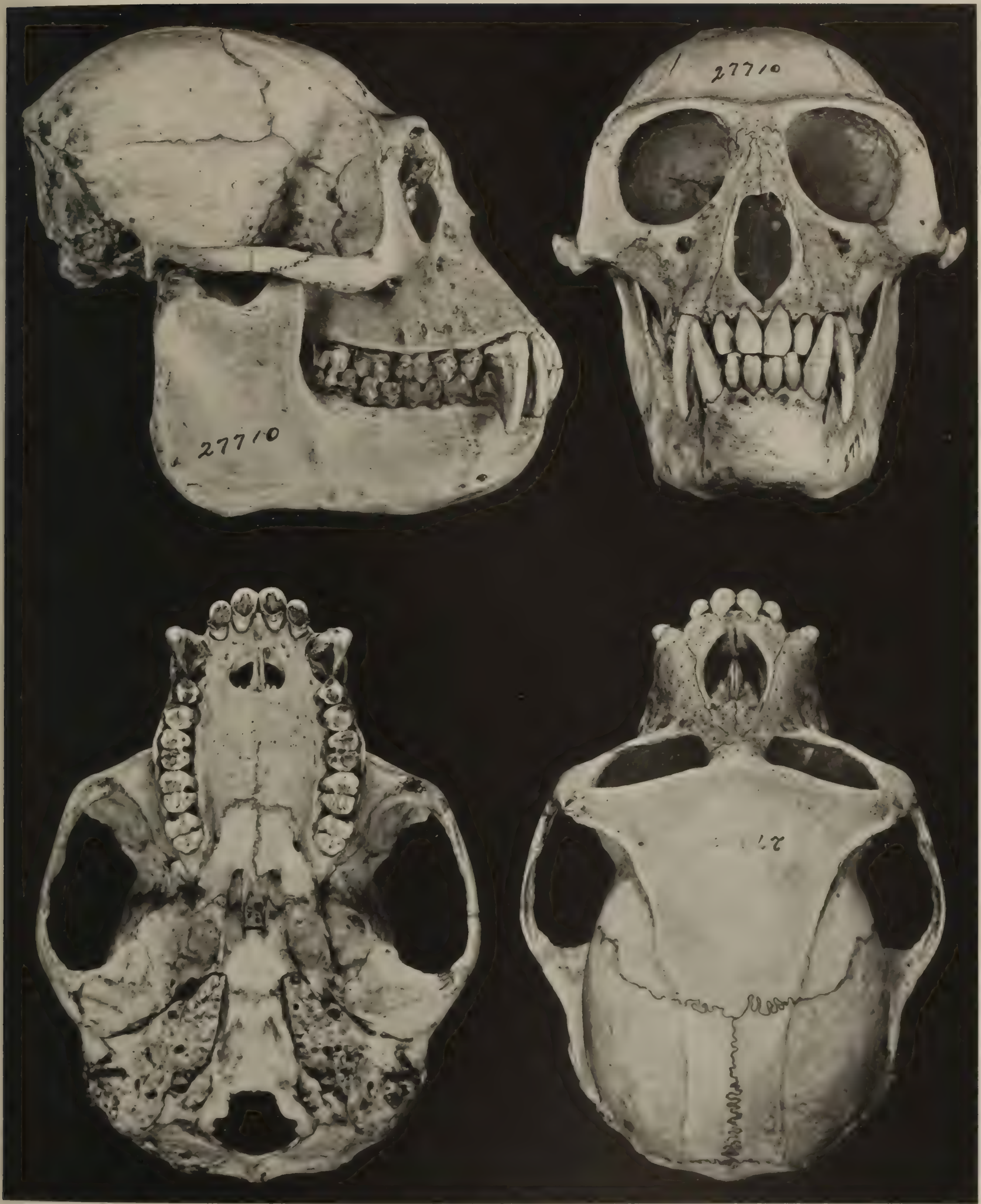
Type locality. Mount Kilimanjaro, German East Africa. Type in British Museum.

Geogr. Distr. Mt. Kenia, British East Africa; Uganda; Unyamwezi, south east of Victoria Nyanza; Mt. Kilimanjaro, German East Africa.

Genl. Char. Remarkable for its large bushy tail, far exceeding in its brush-like character those of all the members of the genus. In the coloring of the body and mantle it resembles C. ABYSSINICUS.

Color. Band across forehead, sides of head, sides of neck, throat to chest, long hairs of mantle from shoulders to tail, lower part of back, and space around callosities white; top of head and hind neck, back, under parts of body, limbs, hands and feet black; tail mixed gray and black for basal third, rest white. Ex type British Museum.

Measurements. Skull: total length, 121; occipito-nasal length,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Colobus caudatus.

No. 27710 Amer. Mus. Nat. Hist. Coll. 4/5 Nat. Size.

92; Hensel, 50; intertemporal width, 44; palatal length, 50; median length of nasals, 18; length of upper molar series, 32; length of mandible, 85; length of lower molar series, 42. Ex type British Museum.

Herr Lönnberg, (l. c.) has described a Colobus from Escarpment Station, British East Africa, under the name of *C. a. kikuyuensis* as follows:

"Closely allied to COLOBUS CAUDATUS, Thomas, but smaller, with the white tuft of the tail shorter and less developed, measuring only 44 cm. to the tips of the hair in a rather old male. The black of the basal part of the tail extending over 24-27 cm., thus longer than in C. CAUDATUS. The young not white, as in C. CAUDATUS, but nearly of the same color as in the adult."

Measurements. "Condylo-basal length of skull in a rather old male 101 mm. (111 mm. in C. caudatus); occipito-nasal length 91 mm. (101 mm. in C. caudatus)."

I have not seen any of Herr Lönnberg's examples of this COLOBUS, and the above very brief description is all that is known of it. Considering that the type locality of C. CAUDATUS, is not so very far removed from that of Herr Lönnberg's examples, and the considerable extent of this part of East Africa in which C. CAUDATUS is found, it would seem unlikely that an allied form would be a resident of a portion of the same district. It may also be remarked that the tufts of the tails among different individuals of C. CAUDATUS are not all of the same length or thickness, and allowance should always be made for individual variation that is generally met with. Dr. Allen (l. c.) mentions how the black on the tail varies in extent in specimens from Mt. Kenia and Kyabe, British East Africa, collected by the Tjader Expedition. Variations in skull measurements also differ considerably sometimes. Herr Lönnberg gives but two, a condylar-basal measurement, one not often given, and the other the "occipito-nasal length" as 91 mm., while that of the type, as given above is 92 mm., not a sufficient difference to require comment. The only other difference mentioned by Herr Lönnberg is "the young not white as in C. CAUDATUS, but nearly of the same color as in the adult." I have examined a great many examples of C. CAUDATUS of all ages and from numerous localities, and have no recollection of ever having seen a white one either old or young, but the latter were always like the adult both in color and its distribution. As I can find nothing in Herr Lönnberg's description of his new form to warrant its separation from C. CAUDATUS I have placed his name among the synonyms.

Colobus gallarum Neumann.

Colobus gallarum Neum., Sitzungsb. Ges. Natur. Freunde, Berlin, 1902, p. 49.

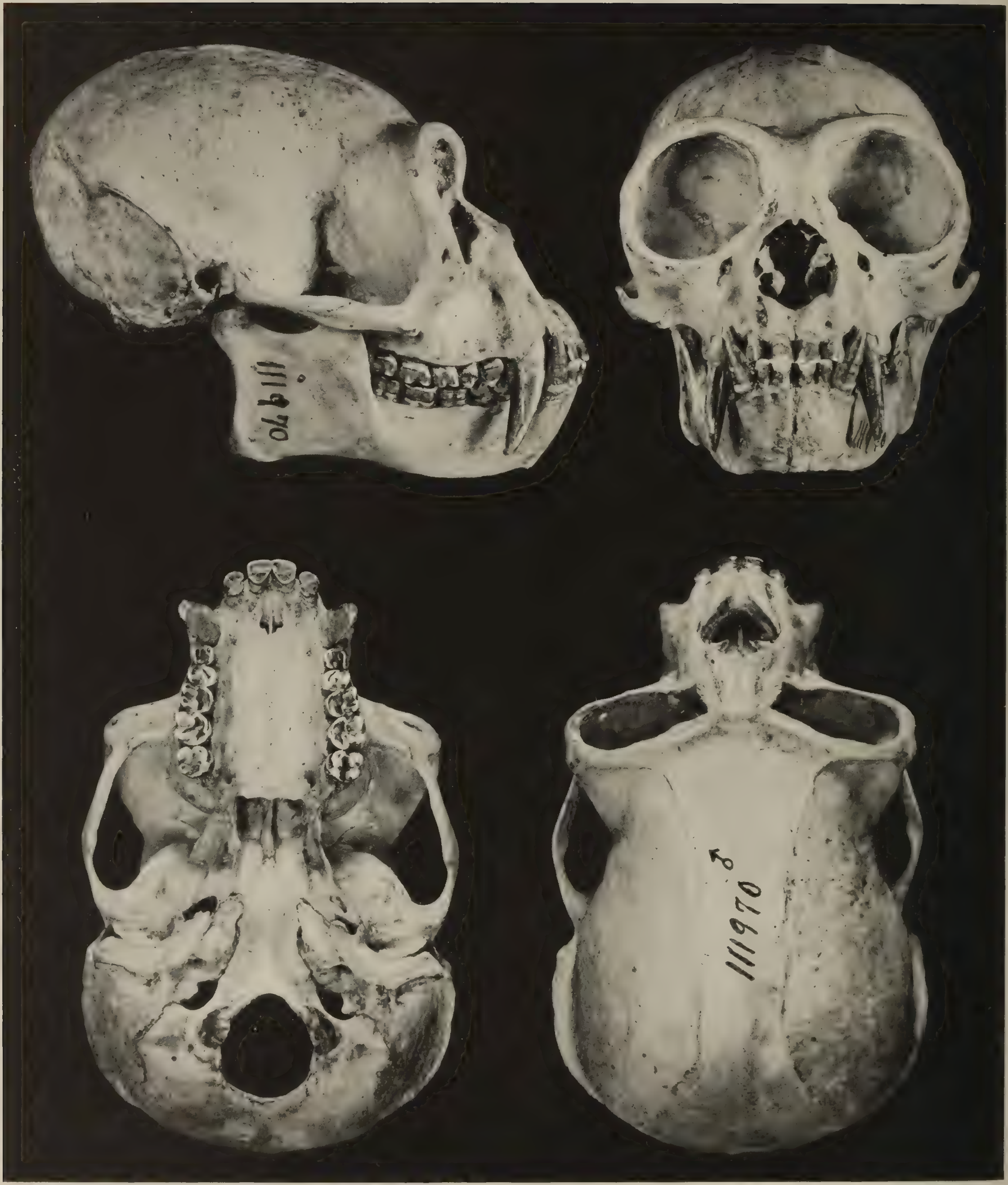
Type locality. Abassie near Harrar, Abyssinia.

Geogr. Distr. Abyssinia and Galla country, East Africa. No type designated.

Color. Narrow band on forehead above eyes, sides of head, chin, throat, sides and front of neck to chest, long hairs of mantle from shoulders to rump continuing across rump, and band around root of tail white, rest of pelage, head, body, limbs, hands, feet black; tail black with gray hairs mixed, tuft white.

Measurements. Skull: total length, 112; occipito-nasal length, 88; zygomatic width, 83; intertemporal width, 47; median length of nasals, 12; length of upper molar series, 31.5; length of mandible, 79; length of lower molar series, 37. Ex typical example Berlin Museum.

This is a close ally of C. CAUDATUS, but differs in the white of throat coming down to the breast and in having the tail nearly all black, only the tuft being white.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HYLOBATES LAR.

No. 111970 U. S. Nat. Mus. Coll. ⅘ Nat. Size.

FAMILY 4. HYLOBATIDÆ.

GENUS I. HYLOBATES. GIBBONS.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{2-2}{2-2};\quad \text{M. } \frac{3-3}{3-3} = 32.$$

HYLOBATES Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 67. Type *Homo lar* Linnæus.

Satyrus Oken, Lehrb. Naturg., 3ter Theil, Zool., 2te Abth., 1816, pp. XI, 1225-1227, (nec Meigen 1803 Diptera).

Laratus Gray, Lond. Med. Repos., XV, 1821, p. 297.

Cheiron Burnett, Quart. Journ. Scien. Lit. and Art, XXVI, 1828, p. 307.

Brachiopithecus Sénéchal, Dict. Pitt. Hist. Nat., VIII, Pt. II, 1839, p. 428. (Part.).

Head small, round; body slender; arms very long, the forearm exceeding the arm in length; thumb and great toe widely separated from the next digits; great toe well developed, and nearly half as long as the foot; callosities present; cheek pouches and tail absent; skull has large orbits; supraorbital ridges prominent; canines large; cusps of molars not forming transverse ridges; last lower molar without posterior talon; vermiform appendage present; sternum consisting of a manubrium and a single bone only; ribs usually seven, but sometimes eight pairs.

Of all the Anthropoids the Gibbons are farthest removed from man. They are well named *Hylobates* or Tree-walkers, for their lives are passed upon trees, through whose branches they move with the ease and swiftness of a bird, but are practically helpless on the ground, over whose surface they progress awkwardly and with no little difficulty, balancing themselves by holding the long arms above the head and hastening forwards as rapidly as possible in order to maintain an equilibrium. But let one of the long slim hands touch a bough of some low tree and how marvellous the change; the struggling animal of earth becomes endowed with flying powers, and in many a graceful sweep and an amazing accuracy of aim, it passes with incredible speed through the forest, holding its course from bough to bough, and tree to tree, in many a graceful swing and curve, rivalling in its swift flight that of the feathered inhabitants of its leafy abode.

The great peculiarity of the Gibbon is its exceedingly long forearm, which so lengthens the entire arm that the tips of the fingers can touch the ground if the animal should stand erect, for the slender hand is longer than the foot, and the thumb is long in proportion.

The voice is wonderfully powerful, and can be heard for a great distance. Gibbons go in troops, and call early in the morning when they may be heard howling in chorus, and at such times the volume of sound is phenomenal. But one young is produced at a time and this is carried by the mother under her body, the little one clinging to her fur with hands and feet, its weight seeming not to have the slightest effect on the female as she makes her way through the forest by prodigious swings.

The Gibbon is a very delicate animal, in spite of its selecting usually an elevated habitat, and rarely survives long in captivity, generally succumbing to some pulmonary complaint. As a rule it is very gentle, sometimes even affectionate, and does not object to being handled even by strangers, coming close up to the side of its cage and inserting its hand and at times its entire arm between the bars, and regarding with grave attention any one who may take its hand and gently stroke the arm.

Most of the recognized species are very variable in coloring and this appears to be regulated by no rule, but is merely an individual peculiarity. The Gibbons never leave the forests of the more elevated tracts of their habitats, and one species only goes to the vicinity of the coasts, the SYMPHALANGUS SYNDACTYLUS of Sumatra.

LITERATURE OF THE SPECIES.

1771. *Linnæus, Mantissa Plantarum.*
HYLOBATES LAR first described as *Homo lar.*
1775. *Schreber, Die Säugthiere.*
HYLOBATES LAR redescribed as *Simia longimana.*
1809. *Latreille, in Sonini Edition Histoire Naturelle de Buffon.*
HYLOBATES LAR redescribed as *Pithecus varius.*
1812. *E. Geoffroy, in Annales du Muséum d'Histoire Naturelle, Paris.*
HYLOBATES AGILIS Cuv., (1821), called *Pithecus lar* nec (Linn.); and HYLOBATES LAR redescribed as *Pithecus variegatus;* and H. LEUCISCUS first described as *Pithecus leuciscus.*
1820. *Kuhl, Beiträge zur Zoologie und vergleichenden Anatomie.*

Three species are here given in the genus Hylobates: H. lar; *H. variegatus* = H. lar; and H. leuciscus.

1821. *F. Cuvier, Histoire Naturelle des Mammifères.*
Hylobates agilis first described.

1827. *Temminck, Monographies de Mammalogie.*
Hylobates agilis renamed *H. variegatus.*

1827. *Harlan, in Proceedings of the Academy of Natural Sciences, Philadelphia.*
Hylobates concolor first described.

1827. *Lesson, in Bulletin des Sciences Naturelles et de Géologie.*
Hylobates concolor redescribed as *H. harlani.*

1828. *Vigors and Horsfield, in Zoological Journal.*
Hylobates lar redescribed as *Simia albimana.*

1828. *E. Geoffroy St. Hilaire, in Cours d'Histoire Naturelle des Mammifères.*
Hylobates agilis redescribed as *Hylobates rafflesi* (melanistic form).

1834. *Harlan, in Transactions American Philosophical Society for Promoting Useful Knowledge.*
Hylobates hoolock first described.

1834. *Winslow-Lewis, in Journal of the Natural History Society of Boston.*
Hylobates fuscus first described.

1839. *Ogilby, in Proceedings of the Zoological Society of London.*
Hylobates hoolock redescribed as *Hylobates choromandus.*

1840. *Ogilby, in Proceedings of the Zoological Society of London.*
Hylobates leucogenys first described.

1840. *Lesson, Species des Mammifères Bimanes et Quadrumanes, etc.*
The following are placed in the genus Hylobates: H. syndactylus, is a Symphylangus; H. leuciscus; H. lar; *H. variegatus* = H. lar; *H. unko* = H. lar; H. hoolock; and *H. choromandus* = H. hoolock. No new species are described.

1840. *Wagner, Schreber, Die Säugthiere, Supplementband.*
The following Hylobates are given in this work: H. syndactylus, (Genus Symphalangus); H. lar; *H. rafflesi* = H. agilis; *H. variegatus* = H. lar; H. hoolock; and H. leuciscus wrongly attributed to Schreber, but first described by E. Geoffroy.

1841. *Martin, A Natural History of Quadrupeds and Other Mammiferous Animals.*
Hylobates concolor redescribed as *H. mülleri.*

1842. *I. Geoffroy, in Comptes Rendus.*
HYLOBATES LAR redescribed as *H. entelloides.* (Yellowish white variety).

1851. *I. Geoffroy St. Hilaire, Catalogue des Primates.*
In this work the following species are recorded: H. LEUCISCUS, wrongly attributed to Schreber; H. AGILIS; *H. mülleri* = H. CONCOLOR; *H. rafflesi* = H. AGILIS; H. LAR; H. HOOLOCK; *H. entelloides* = H. LAR; and *H.* SYNDACTYLUS = SYMPHALANGUS SYNDACTYLUS.

1853. *I. Geoffroy St. Hilaire, in Comptes Rendus.*
HYLOBATES FUNEREUS first described.

1856. *Dahlbom, Studies Zoologica Familias Regiis Animalis Naturales.*
A synopsis of the species of HYLOBATES is here given. An important character is considered to be the presence or absence of a tubercle on the clavicle, and species recognized accordingly. This tubercle, however, indicates a more or less powerful attachment for the muscle, and is not a structural character nor one bestowing specific value, but is the result of great activity or effort on the part of the individual. The species recognized are H. LEUCISCUS; *H. mülleri* = H. CONCOLOR; H. HOOLOCK; *H. entelloides* = H. LAR; H. LAR; H. AGILIS; *H. rafflesi* = H. AGILIS.

1861. *Gray, in Proceedings of the Zoological Society of London.*
HYLOBATES PILEATUS first described.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.*
The genus of HYLOBATES in this work is divided into two subgenera A. *Siamanga* with S. SYNDACTYLUS; and B. HYLOBATES with H. LAR; H. HOOLOCK; *H. rafflesi* = H. AGILIS; H. LEUCOGENYS; *H. albimanus* = H. LAR; *H. mülleri* = H. CONCOLOR; H. AGILIS; *H. entelloides* = H. AGILIS; *H. choromandus* = H. HOOLOCK; H. FUNEREUS; H. LEUCISCUS; H. PILEATUS.

1870. *Swinhoe, in Proceedings of the Zoological Society of London.*
HYLOBATES NASUTUS renamed *H. pileatus.*

1870. *Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in Collection of the British Museum.*
In this list the species of HYLOBATES are divided into two groups: I. Hands and feet white; nose rather elongate; and II. Hands and feet like the rest of body. In the first of these are placed, H. LAR; and H. PILEATUS; and in the second, H.

LEUCOGENYS; H. HOOLOCK; *H. rafflesi* = H. AGILIS; H. AGILIS; and H. LEUCISCUS.

1876. *Pousargues, in Bulletin du Muséum d'Histoire Naturelle, Paris.* HYLOBATES HENRICI first described.

1876. *Schlegel, in Muséum des Pays-Bas, Simiæ.* After reviewing briefly the distribution of HYLOBATES as species, the Author divides those recognized by him, into two groups, the second having only one species *H.* SYNDACTYLUS which is almost universally regarded as representing a distinct genus, SYMPHALANGUS. The other species recognized are H. LAR; H. PILEATUS; H. HOOLOCK; H. AGILIS; H. LEUCISCUS; H. CONCOLOR; *H. mülleri* = H. CONCOLOR.

1884. *Künckel, in Sciences Naturelles, Paris.* HYLOBATES NASUTUS first described.

1878. *Anderson, Anatomical and Zoological Researches and Zoological Results of the Yunnan Expeditions.* In this work a synopsis of the species is given with a full synonymy and discussion of the specific values. The species recognized are H. HOOLOCK; H. LAR, with pale variety *H. entelloides;* H. FUNEREUS ex Sulu as a synonym. H. AGILIS; *H.* SYNDACTYLUS, belonging to the genus SYMPHALANGUS; H. FUSCUS; and H. CONCOLOR Harlan.

1892. *Thomas, in Annals and Magazine of Natural History.* HYLOBATES NASUTUS redescribed as *H. hainanus.*

1909. *Thomas, in Annals and Magazine of Natural History.* HYLOBATES GABRIELLI first described.

1911. *M. W. Lyon, Jr., in Proceedings of the United States National Museum.* HYLOBATES CONCOLOR redescribed as *Hylobates mülleri albibarbis.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The Gibbons are essentially an Oriental Family the most western limit of any of the species being, according to Pemberton, the Hills or lower ranges of Bhutan where H. HOOLOCK is found, and thence extends its range to Upper Assam, Sylhet Cachar, the Khasia and Garo Hills, Chittagong, Arakan, and south to Martaban, according to Anderson, on the gulf of that name. In Upper Burma it also occurs in the defile of the Irawady below Bhamo, and also on the Kakhyen Hills on the eastern frontier of Yunnan. From the boundary between

Pegu and Arakan, to Tenasserim up to 3,500 feet, and the Malay Peninsula H. LAR has its range. In Siam H. LEUCOGENYS and H. PILEATUS are found, the latter also going to Cochin China, through Cambodgia.

In Tonkin at Lai-chee, near the Yunnan border H. HENRICI was procured, and H. NASUTUS, which is also a native of the Island of Hainan. In Annam H. GABRIELLI has been obtained. In Sumatra we have H. AGILIS; and H. LEUCISCUS in Java. Borneo contains but one species remarkable for the wonderful variation in the color of its coat, H. CONCOLOR; and attributed to Sulu Island is a doubtfully separable form H. FUNEREUS. One very doubtful form from an unknown locality remains, H. FUSCUS.

KEY TO THE SPECIES.

A. General color black.
- *a.* Color entirely black .... *H. nasutus.*
- *b.* Frontal band white .... *H. hoolock.*
- *c.* Eyebrows, whiskers, beard, hands and feet white ...... *H. lar.*
- *d.* Top of head, occiput and line down back of neck black .... *H. henrici.*
- *e.* Area below ears, and throat beneath chin white. *H. leucogenys.*
- *f.* Area below ears, and throat beneath chin ochraceous .... *H. gabrielli.*

B. General color uniform gray .... *H. leuciscus.*
C. General color buff or pale brown .... *H. agilis.*
D. General color buff and black or grayish and black. . *H. pileatus.*
E. General color brown and black .... *H. concolor.*
F. General color grayish white .... *H. funereus.*
G. General color dirty brown .... *H. fuscus.*

The above Key, excepting H. HENRICI, describes the typical style only of the recognized species, all of which are subject to variation, some of them to a most extraordinary degree, the black ones having albinistic individuals in many degrees of change and variety of tints; the paler forms on their side having melanistic representatives wholly or in part, so that a collection of members of this genus presents a bewildering array of many colored or unicolored individuals.

These examples, adverse in the hues of their coats to the typical style, are not confined to particular localities, but are found, members of the same troop, and frequently in the same place in which the type was obtained, proving conclusively, that the numerous variations common to practically all the accepted species, have no specific value, but are merely individual vagarisms, to be regarded as a curious fact, but one not worthy of any serious scientific consideration.

HYLOBATES NASUTUS Künckel.

Hylobates nasutus Künck., Scien. Nat., 1884, pp. 86-89, fig. desc.; A. Milne-Edw., Le Natural., 1884, p. 497.

Hylobates pileatus Swinh., Proc. Zool. Soc. Lond., 1870, p. 224, (nec Gray).

Hylobates hainanus Thos., Ann. Mag. Nat. Hist., IX, 6th Ser., 1892, p. 145; Sclat., Proc. Zool. Soc. Lond., 1892, p. 541; Forbes, Handb. Primates, II, 1894, p. 164; Pocock, Proc. Zool. Soc. Lond., 1905, p. 160, pl. V.

Type locality. Tonkin (Harmond), Menagerie of the Jardin des Plantes, Paris. Milne-Edwards' specimen in Paris Museum. The whereabouts of Künckel's type is unknown.

Geogr. Distr. Island of Hainan. Cochin China.

Color. Everywhere black, body and limbs.

Measurements. Size of body and limbs about equal to H. HOOLOCK. No skull available.

Milne-Edwards' type of this species was a young animal brought from Tonkin by Dr. Harmond and at one time was living in the Menagerie in the Jardin des Plantes, Paris. Like its relatives this species has its varieties, and while the typical style is wholly black, entirely white individuals are known, and doubtless if a series of examples were procured, all styles between the wholly black or entirely white dress would be seen. Milne-Edwards' type is preserved in alcohol. The entire top of the head is now red, and there is a reddish patch on the breast. This discoloration is probably caused by the spirit; the rest of the pelage however is jet black. The individual lived for some time in the Menagerie of the Jardin des Plantes, Paris. Two individuals of this species were received by the Zoological Society of London from Hainan in the jet black pelage, but when their coats were shed, one, the female, gradually assumed a white or silvery gray dress as is shown in the plate published in the Society's Proceedings, thus presenting a striking and an unanswerable evidence of the mutability of the coloring in the coats of members of this genus, and its worthlessness as a specific character, when the general hue of the dress is considered. Some characteristics may be regarded as perhaps permanent, as the white hands and feet of H. LAR, but no dependence can be placed upon the general hue of the pelage at any time. Uniformity of coloring is not one of the tenets of the species of HYLOBATES, and so far as the hues of their coats are concerned each one wears whatever seems best in his own eyes. The quantity and depth of color pigments among the members of the different species is a most uncertain quality, and rarely do two individuals possess them in the same degree, otherwise these many and extreme variations are quite unaccountable.

Mr. Pocock states that the voice of the Hainan Gibbon "is quite different from that of the Hoolock. It has a high pitched trill all on the same note, and shriller even than the high note of the Hoolock's cry. It consists of from about three to six distinct cries repeated in very rapid succession, suggesting almost production by vibration of the tongue, although as a matter of fact, I believe the lips alone are instrumental in producing the effect. There is then a momentary pause, after which the cry is repeated. It may perhaps be represented in the following way: hoo, hoo, hoo, hoo—hoo, hoo, hoo—hoo, hoo, hoo, hoo—etc. The Hoolock on the contrary cries as follows: hah, hoo, hah, hoo, hah, hah, hoo, hah. The 'hoo' is on a lower note than the 'hah,' with which the cry frequently ends.

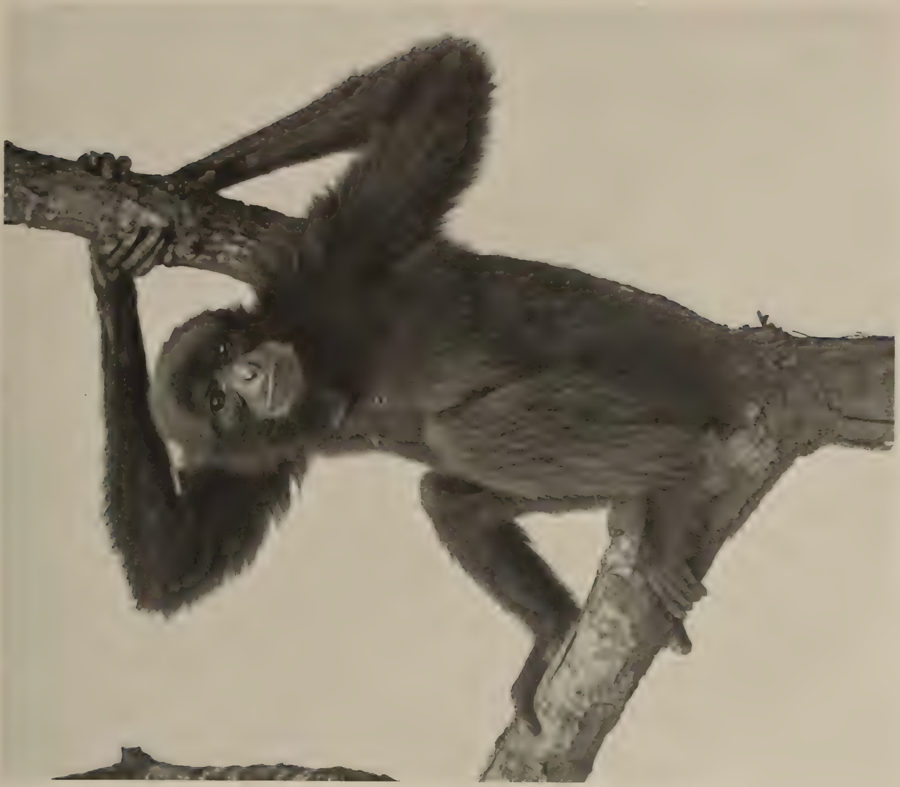
"The ordinary expression of anger or remonstrance in the Hainan Gibbon is a prolonged and guttural grunt, which is repeated rapidly and often, and frequently interspersed with a kind of warble when the excitement rises.

"Both the Hoolock and Lar Gibbon in the Gardens drink habitually by dipping the back of the hand and knuckles into the dish and licking the water off. They do not scoop it up in the strict sense of the word at all. The Hainan Gibbon, on the contrary, almost invariably drinks direct with her mouth, only very rarely using her left hand for the purpose. It is possible she may have abandoned the habit of employing the hand at the time when an injury deprived her of the use of her right arm, and since the left is frequently occupied in supporting herself upon the bars or perches in the cage, she has no hand available for the purpose of drinking without quitting her hold."

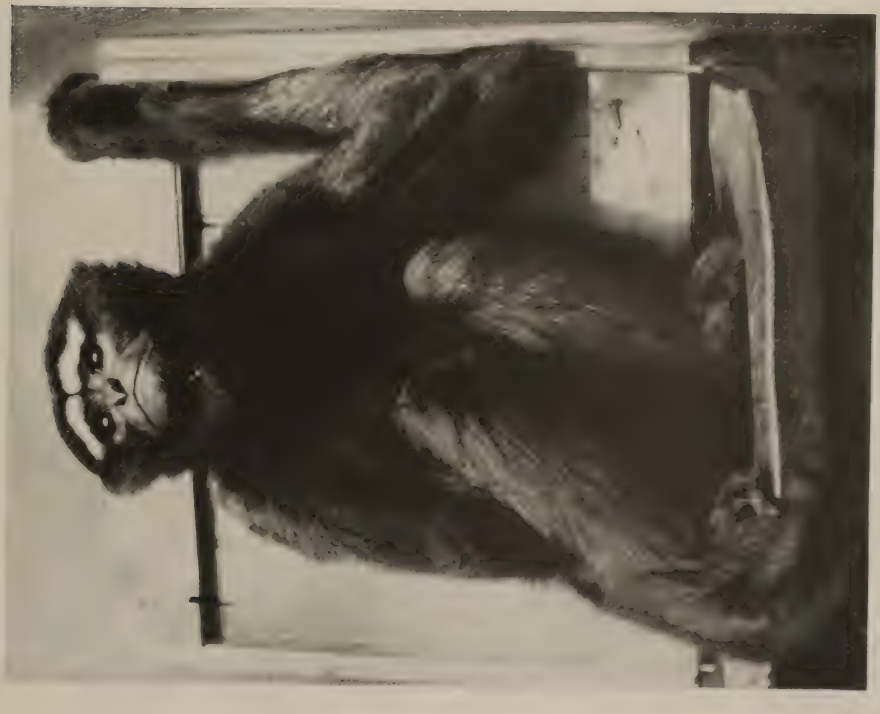
HYLOBATES HOOLOCK Harlan.

Simia hoolock Harlan, Trans. Amer. Phil. Soc., IV, New Ser., 1834, p. 52, pl. II.

Hylobates choromandus Ogilby, Proc. Zool. Soc. Lond., 1837, p. 689; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 3; Less., Spec. Mamm., 1840, p. 54; Martin, Mammif.



SYMPHALANGUS SYNDACTYLUS.



HYLOBATES HOOLOCK.

Anim., 1841, pp. 415, 442, pl.; I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 535; Schinz, Syn. Mamm., I, 1844, p. 31; Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, p. 464; Gerv., Hist. Nat. Mamm., I, 1854, p. 55; Reichenb., Vollständ. Naturg. Affen, 1862, p. 174, figs. 441-444; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 26.

Hylobates hoolock Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 2nd ed., 1838, p. 3; McClell., Proc. Zool. Soc. Lond., 1839, p. 148; I. Geoff., Archiv. Mus. Hist. Nat. Paris, II, 1841, p. 535; Martin, Mammif. Anim., 1841, pp. 416, 438, fig.; Blyth, Journ. Asiat. Soc. Beng., XI, 1841, p. 838; XIII, 1844, pp. 464, 476; XLIV, 1875, ext. no. p. 1; *Id.* Cat. Mamm. Asiat. Soc. Beng., 1863, p. 4; Gray, Handb. Mamm. Brit. Mus., 1843, p. 2; Schinz, Syn. Mamm., I, 1844, p. 29; I. Geoff., Cat. Primates, 1851, p. 9; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 2; Gerv., Hist. Nat. Mamm., I, 1854, p. 54, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 76; Sclat., Proc. Zool. Soc. Lond., 1860, p. 86, pl. V; Reichenb., Vollständ. Naturg. Affen, 1862, p. 168, fig. 425; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 11; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 14; Anders., Zool. Res. Exped. Yunnan, 1878, p. 1; Blanf., Faun Brit. Ind., Mamm., 1891, p. 5; Forbes, Handb. Primates, II, 1894, p. 161; Candl., Proc. Zool. Soc. Lond., 1906, p. 187.

?*Hylobates scyritus* *Ogilby et Auct., nec desc. vide Anderson, Zool. Res. Exp. Yunnan, 1878, p. 1, note.

Hylobates hulok Wagn., Schreb., Säugth. Suppl., I, 1840, p. 76; V, 1855, p. 20.

Hylobates houlock Less., Spec. Mamm., 1840, p. 54.

THE HOOLOCK.

Type locality. Garo Hills.

Geogr. Distr. Upper Assam to Sylhet and Cachar and the Khesia and Garo Hills, Chittagong, Arakan, south to Martaban. Defile of the Irawady below Bhamo, Upper Burma, and Kakhyen Hills on the eastern boundary of Yunnan.

Color. Adult male. White frontal band; rest of pelage, hands and feet black. *Female.* Pelage generally tinged with brown; often, however, the color is pale yellow, or grayish yellow; nude face encircled with white; under parts and sides of head brown. Young males often resemble the females and have a brownish black pelage. The species is subject to great individual variation.

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*I have not found this name as given by Ogilby.

Measurements. Head and body, 520; foot, 150. Skull: total length, 114; occipito-nasal length, 93.9; intertemporal width, 49; breadth of braincase, 61.5; Hensel, 82.2; zygomatic width, 72.4; median length of nasals, .95; palatal length, 45.7; length of upper canines, 21.5; length of upper molar series, 29.6; length of mandible, 78.6; length of lower molar series, 35.

The specimen called *H. choromandus* by Ogilby (l. c.) from an unnamed locality, is without doubt this species. It was presented to the Zoological Society of London by General Hardwicke many years before it was described, and at the same time a typical H. HOOLOCK from the same locality had also been presented, name of donor not mentioned. It is stated to be "ashy brown" in color, and is no doubt a young male, or a female. The whiskers are stated to be "black." The description is contained in the words quoted, hardly sufficient to determine a specimen, even if of a new species, particularly if no locality for it was given, but as it was accompanied by a veritable H. HOOLOCK, it may without hesitation be referred to it, as no two species of HYLOBATES are known to inhabit the same locality.

While the general and typical hue of this species is black, many varieties are found, even almost wholly white, or yellowish white individuals. In general, however, the Hoolocks may be said to be more steadfast to a typical style of coloring than any other member of the HYLOBATES group so far as the male is concerned, the variation in the color of the pelage being more often observed in the female. They represent the changeable sex.

The Hoolock is confined in its range to a comparatively limited district bounded by the Brahmaputra and Irawady Rivers; its aversion to water, for it cannot swim, probably preventing it from making any effort to cross such broad streams. Like all the members of this genus the Hoolock is arboreal, and although it can make a ludicrous progress over the ground balancing its body by awkwardly holding its long arms bent over its head, its life is passed in the trees, under whose branches it swings itself in a trapeze-like performance in so swift a progress that it can only be likened to the passage of a bird through the air. Mr. Candler has given (l. c.) an interesting account of the habits of this ape, short extracts from which are here given. "He swings along to the thinnest part of a bough, or to the slender end of a bamboo, until it bends to his weight, then with a swing and a sort of kick-off, he flies through the air, seizing another bough and swinging along it with the unerring accuracy of a finishel trapeze performer. I fancy he does very little walking in the wild state, for I have never seen a wild Hoolock on the ground. Moreover they are only found in the dense jungle, where the ground is everywhere covered with tangled vegetation. It is puzzling to me why these anthropoids, being so entirely arboreal in habit, should be lacking in such a useful appendage as a tail. The Hoolocks are extremely shy, and it is most difficult to watch them, as they are concealed by leaves high up in the tops of the bamboo clumps or forest trees. You may hear their cries all around you as you ride quickly along a jungle-tract. but the moment you leave the path or look up at them there is a dead silence and scarcely a leaf stirs, until tired of waiting, you move on again. The cry of the Hoolock is a characteristic sound in the Cachar jungle. It is a very pleasing note, rising and falling in intensity, and reminding one somewhat in its rhythm of a pack of beagles giving tongue on a scent which is waxing and waning in strength, as a larger or smaller number of the band join in the chorus. It is heard chiefly in the early morning, then all through the heat of the day there is silence, but towards evening as the sun sinks, you may hear it again. Hooloo! Hooloo! Hooloo! with the accent on the Hoo syllable, is supposed to describe the sound, but it is really quite indescribable in writing. As in other species of Apes, there is a special modification of the larynx, which acts as a sort of resounding box, and helps, (I suppose), to make the sound carry, as it does, long distances. There is also a peculiar arrangement of the upper aperture of the larynx, with its small and inadequate looking epiglottis, which more resembles the arrangement in birds than the leaf-like epiglottis in man.

"As, day after day I have ridden through the jungle, it has seemed to me that the Hoolocks worked their ground systematically in their search for food, just as the planter plucks one section of his tea today and another section in a distant part of the garden to-morrow. For I have found them filling the air with their cries along a particular stretch of jungle-road one day, whilst the next day not one was to be heard; then perhaps, a week later they are back again in the same place. Living as they do in communities, they are constantly on the move, and from what we know of their great intelligence, it seems to me highly probable that their movements are guided by very definite plans, and that very probably they have some sort of government system.

"In Cachar, where these notes are written, the tea-planters often keep Hoolocks for years, allowing them to run loose about the compound; * * * Several such tame Hoolocks I have had the opportunity of observing for some months past. Often they will be away in the tree tops for days together, when nothing will tempt them down, but when one chooses to be sociable he will come and sit on the arm of your chair at breakfast, and never reach or snatch things off the table, in fact his manners are unexceptionable, and he keeps his skin beautifully clean. At sunset you may see him settle down to sleep, jammed tight in the fork of a tree in a squatting position. In this semi-domesticated state I notice that the Hoolock seldom uses his voice. I suppose, leading a solitary bachelor life, he finds no necessity for chattering or calling.

"With regard to the diet of the Hoolock, Dr. Blanford gives a long list, including fruit, leaves, young shoots, spiders, insects, birds, eggs and young birds. But it seems to me the diet of such shy creatures must be largely a matter of conjecture, for no certain conclusions can be drawn from the habits of captured specimens, nor can we recognize as a rule substances in the stomachs of shot specimens, as we can in the crop in the case of birds. My own observations lead me to believe that fruits and the succulent shoots of young bamboos and other trees form the bulk of their diet. They will certainly catch and eat certain spiders; but I have invariably found them to refuse such insects as moths or butterflies, perhaps because many such insects have a bitter taste. Eggs too, I found they will not eat. If you give an insect or small bird to a Hoolock he will certainly pull it to pieces, and possibly taste or bite it, but it by no means follows that it is one of the regular dishes he enjoys in his wild life.

"When captured young the Hoolock is easily tamed, and is gentle, good-tempered, very intelligent and cleanly in its habits. It is, however, very delicate, and does not live long in captivity. The female gives birth to a single young, but as regards the period of gestation but little is known."

Anderston states, (l. c.) that "the Hoolock is common on the Kakhyen hills, on the eastern frontier of Yunnan, and there, too, my attention was called to them at daybreak when they passed up from their sheltered sheeping-ground in the deep and warm valleys to a height of about 4,000 feet. We, in the middle distance, first caught a faint murmur of voices; but every minute it became more and more distinct, till at last the whole troupe rushed past in a storm of sound, vociferating 'whoko' 'whoko!' and in a few minutes more their cry was heard far up the mountain-side. Considering that their progress is almost exclusively arboreal, the rapidity with which they make their ascent is wonderful."

Hylobates lar (Linnæus).

Homo lar Linn., Mantis. Plant., 1771, Append., p. 521.

Simia longimana Schreb., Säugth., I, 1775, p. 66, pl. III, figs. 1, 2; Erxl., Syst. Regn. Anim., 1777, p. 9; Zimmer., Geogr. Gesch., II, 1780, p. 174.

Simia lar Bodd., Elench. Anim., 1784, p. 55; Fisch., Syn. Mamm., 1829, p. 12, (Part.).

Pithecus lar Latr., Hist. Nat. Buff., XXXVI, 1809, p. 276.

Pithecus varius Latr., Hist. Nat. Buff., XXXVI, 1809, p. 276.

Pithecus variegatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 88.

Hylobates lar Illig., Abhandl. Akad. Wiss., Berlin, 1815, p. 88; Kuhl, Beitr. Zool., 1820, p. 5; Desm., Mamm., 1820, p. 50, pl. V, fig. 3; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 33, 7me Leçon; Less., Spec. Mamm., 1840, p. 52; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 71; V, 1855, p. 15; Martin, Mammif. Anim., 1840, pp. 416, 417, 463, pl.; Blyth, Journ. Asiat. Soc. Beng., X, 1841, p. 838; XII, 1843, p. 176; XIV, 1845, p. 463; XV, 1846, p. 172; XVI, 1847, p. 729; XLIV, 1875, ext. no. p. 1; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 5; Gray, Handb. Mamm. Brit. Mus., 1843, p. 2; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p 10; Cantor, Journ. Asiat. Soc. Beng., XV, 1846, p. 172; Fry, Proc. Zool. Soc. Lond., 1846, p. 15; *Id.* Ann. Mag. Nat. Hist., XVI, 1st Ser., 1846, p. 487; I. Geoff., Cat. Primates, 1851, p. 8; Gerv., Hist. Nat. Mamm., I, 1854, p. 52, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 77; Tickell, Journ. Asiat. Soc. Beng., XXVIII, 1859, p. 428; *Id.* Ann. Mag. Nat. Hist., XIV, 1869, p. 360; Sclat., Proc. Zool. Soc. Lond., 1860, p. 86, pl. V; Reichenb., Vollständ. Naturg. Affen, 1862, p. 167, figs. 422-424; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 10; Sclat., Proc. Zool. Soc. Lond., 1870, p. 86, pl. V; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 15; Anders., Zool. Res. Exped. Yunnan, 1878, p. 5; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 28; Blanf., Faun. Brit. Ind., Mamm., 1891, p. 7; Forbes, Handb. Primates, II, 1894, p. 159.

Hylobates variegatus Kuhl, Beitr. Zool., 1820, p. 5; Desm., Mamm., 1820, p. 51; Less., Man. Mamm., 1827, p. 31; Griff., Anim. Kingd., V, 1827, p. 6; I. Geoff., Bélang., Voy., 1834, p. 27; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; Less., Spec. Mamm., 1840, p. 52; Schinz, Syn. Mamm., I, 1844, p. 30, (Part.).

Simia albimana Vig. and Horsf., Zool. Journ., IV, 1828, p. 107.

Simia variegatus Fisch., Syn. Mamm., 1829, p. 11.

Hylobates albimanus I. Geoff., Bélang., Voy., 1834, p. 29; Schleg., Essai Phys. Serp., Pt. Gen., 1837, p. 237; Schinz, Syn. Mamm., I, 1844, p. 28; Reichenb., Vollständ. Naturg. Affen, 1862, p. 171, fig. 429.

Hylobates unko Less., Spec. Mamm., 1840, p. 53.

Hylobates leuciscus Cantor, Ann. Mag. Nat. Hist., XVII, 1846, p. 338, (nec Schreber).

Hylobates entelloides I. Geoff., Compt. Rend., 1842, XV, p. 717; *Id.* Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 582, pl. XXIX; Reichenb., Vollständ. Naturg. Affen, 1862, p. 173, figs. 437-440.

Hylobates agilis (nec F. Cuv.), Flower, Proc. Zool. Soc. Lond., 1900, p. 313. Ex Malay Peninsula.

WHITE-HANDED GIBBON.

Type locality. "India."

Geogr. Distr. Tenasserim, up to 3,500 feet, and Malay Peninsula, north to the range between Pegu and Arakan. Possibly in the Sittoung Valleys, Burma.

Genl. Char. Similar to H. HOOLOCK but hands and feet white, and white eyebrows and whiskers.

Color. Hair around face grayish white; hands and feet white; entire rest of pelage black.

Measurements. Skull: occipito-nasal length, 85; zygomatic width, 63; intertemporal width, 47; median length of nasals, 9; length of upper molar series, 23; length of mandible, 67; length of lower molar series, 29.

The *Hylobates albimanus* Geoffroy, is represented in the Paris Museum by an individual obtained by the "Expédition de la Bonite," and is marked on the label as the 'type.' The hair around the face and on the cheeks with the hands and feet is white; rest of pelage dark reddish brown. It is one of the color variations seen among individuals of this species, but without any specific value, and the same may be said of the *H. entelloides* I. Geoffroy, the type of which is in the Paris Museum, and which is entirely a pale yellow, a hue not infrequently seen among examples of H. LAR.

Capt. Flower (l. c.) under the name of *H. agilis* says that, "in the Museum at Taiping there are specimens of both the black and light varieties from Larut, Perak. In April, 1898, when I was in the Larut Hills, a party of these Gibbons were to be seen daily in a group of high trees at about 3,200 feet elevation; every morning they commenced calling at 6 A. M. and continued until 10.30 A. M. They must come down almost to the foot of the hills, as I have frequently heard them in the morning from Taiping, which is but little above the sea-level."

Tickell (l. c.) gives the following account of this species as observed by him in Tenasserim: "The HYLOBATES LAR is found in great abundance in all the forests skirting the hills, which run from north to south through the Province of Tenasserim. They ascend the hills themselves up to an elevation of 3,000 to 3,500 feet above sea-level, but not higher, and are usually met with in parties of from 8 to 20, composed of individuals of all ages. It is rare to see a solitary one; occasionally, however, an old male will stay apart from the flock, perched on the summit of some vast tree, whence his howls are heard for miles around. The forests which these animals inhabit, resound with their cries from sunrise to about 9 A. M. * * * During these vocal efforts they appear to resort to the extreme summits of the loftiest trees, and to call to each other from distant parts of the jungle. After 9 or 10 A. M. they become silent and are engaged feeding on fruit, young leaves, and shoots, and insects for which they will occasionally come to the ground. When approached, if alone, they will sometimes sit close, doubled up on a thick tuft of foliage, or behind the fork of a tree near the top, so screened as to be quite safe from the shot of the sportsman. But indeed when forced from its concealment and put to flight, the Gibbon is not easily shot. It swings from branch to branch with its long arms, shaking the bough all around, flings itself from prodigious heights into dense foliage, and is quickly concealed from view by intervening trees.

"If hit, there is no animal more tenacious of life, and its efforts when desperately wounded to cling to the branch and drag itself into some fork or nook where to hitch itself and die, excite amusement and compassion.

"The Gibbon (if we restrict that name to this species) is not nearly so light and active as its congener H. HOOLOCK (the Tooboung of the Arakanese,) which latter species is not likely to vary in color, being always black, with the hands and feet concolorous, and the supercilia only white, instead of a circle of that color all around the face. The Gibbon, moreover, walks less readily on its hindlegs than the hoolock, having frequently to prop and urge itself along by its knuckles on the ground. In sitting it often rests on its elbows, and will lie readily on its back. Anger it shows by a fixed steady look, with the mouth held open and the lips occasionally retracted to show the canines, with which it can bite severely, but it more usually strikes with its long hands, which are at such times held dangling and shaken in a ridiculous manner, like a person who has suddenly burnt his fingers. It is, on the whole, a gentle peaceable animal, very timid and so wild as not to bear confinement if captured adult. They are born generally in the early part of the cold weather, a single one at a birth, two being as rare as twins in the human race. The young one sticks to the mother's body for about seven months, and then begins gradually to shift for itself. So entirely does this animal confine itself to its hands for locomotion about the trees, that it holds anything it may have to carry by its hind hands or feet. In this way I have seen them scamper off with their plunder, out of a Karen plantain garden in the forest.

"I have had many of these animals while young in confinement. They were generally feeble, dull, and querulous, sitting huddled upon the ground, and seldom or never climbing trees. On the smooth surface of a matted floor they would run along on their feet, and slide on their hands at the same time. By being fed solely on plantains, or on milk and rice, they were apt to lose all their fur, presenting in their nude state a most ridiculous appearance. Few recovered from this state; but a change of diet, especially allowing them to help themselves to insects, enabled some to come round, resuming their natural covering. For the most part they were devoid of those pranks and tricks which are exhibited by the young of the *Macacus* and *Inuus,* though occasionally and if not tied up, they would gambol about with cats, pups, or young monkeys.

"The tawny and black varieties of the Gibbon appear to mix indiscriminately together. The Karens in the Tenasserim provinces consider there is a third variety which they name 'Khay oo kaba,' and the Talains 'Woot-o-padga' (blue ape). This is probably the particolored or mottled phase of the animal which occurs very often to the southward in Malacca. The pale variety is more numerous in the district of Amherst than the black one.

"HYLOBATES LAR extends southward to the Straits, and northward to the northerly confines of Pegoo (British Burma); whether it is found throughout Burma proper or not, I cannot ascertain. To the west of the spur dividing British Burma from Arakan, and throughout the latter province into the mountains east of Chittagong, is found only HYLOBATES HOOLOCK. And further northward in the forests and hills of Cachar, Munnipoor and Asám, exists either a third species (not yet I believe distinguished by Naturalists), or if the same species as H. HOOLOCK, so strongly modified as to be larger and stouter, with a totally different call, and subject to vary in color the same as H. LAR, which H. HOOLOCK in Arakan is not."

HYLOBATES HENRICI Pousargues.

Hylobates henrici Pousarg., Bull. Mus. Hist. Nat., Paris, 1896, p. 367, ♀.

PRINCE HENRY OF ORLEANS' GIBBON.

Type locality. Lai-chau, (Tonkin), north of Black River, near border of Yunnan.

Color. Top of head and occiput in the center black, the spot continues as a black line on back of neck; sides of head, chin, throat, and shoulders, ochraceous rufous; forehead ochraceous buff; body and limbs buff. Ex type Paris Museum. Flat skin, incomplete; arms from elbows and legs from knees lacking. In another specimen the hands and feet are yellowish white.

Measurements. Head and body, 990.

Whether this is a phase of H. LAR from a new locality or a distinct form cannot yet be definitely determined. More adult examples must be obtained before its status in the group can be fixed.

HYLOBATES LEUCOGENYS Ogilby.

Hylobates leucogenys Ogilby, Proc. Zool. Soc. Lond., 1840, p. 20; Blyth, Journ. Asiat. Soc. Beng., X, 1841, p. 838; Martin, Mammif. Anim., 1841, p. 445, pl.; I. Geoff., Compt Rend., XV, 1842, p. 717; *Id.* Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 535; Schinz, Syn. Mamm., I, 1844, p. 28; Gerv., Hist. Nat. Mamm., I, 1854, p. 54; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 20; Reichenb., Vollständ. Naturg. Affen, 1862, p. 171, fig. 428; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 11; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 13; Sclat., Proc. Zool. Soc. Lond., 1877, p. 679, pl. LXX; Anders., Zool. Res. Exped. Yunnan, 1878, p. 6; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 34; Forbes, Handb. Primates, II, 1894, p. 158.

WHITE-CHEEKED GIBBON.

Type locality. Siam. Type in British Museum.

Geogr. Distr. Siam.

Color. Area below ears, cheeks, throat beneath chin white; rest of pelage black; face and ears black. Ex type British Museum.

Measurements. Head and body, 448.8; foot, 139.7. Ex type British Museum.

HYLOBATES GABRIELLI Thomas.

Hylobates gabrielli Thos., Ann. Mag. Nat. Hist., 1909, 8th Ser., p. 112. Type in British Museum.

Type locality. Lang Bian, Annam. Altitude 1,500 feet.

Color. Face black; sides of under jaw and throat beneath chin, ochraceous; all the rest of pelage, head, upper and under parts of body, chin, limbs, hands and feet, jet black. Ex type British Museum.

Measurements. Total length, 560; foot, 150. Skull: total length, 116; occipito-nasal length, 97.2; intertemporal width, 50; breadth of braincase, 65.1; Hensel, 79.4; zygomatic width, 75.7; median length of nasals, .86; palatal length, 42.2; length of upper canines, 18.8; length of upper molar series, 27; length of mandible, 75.7; length of lower molar series, 31.5. Ex type British Museum.

A single specimen of this rather curiously marked Gibbon is in the British Museum, and is different from any example I have met with. Whether it represents a phase of pelage not yet seen of some species, or is that of an undescribed species, cannot as yet be determined, and we must wait for additional specimens before it can be satisfactorily decided. The H. HENRICI Pousargues comes from a locality considerably to the north of the present form, but it may have a range sufficiently great to bring it into Annam.

The type of H. HENRICI certainly does not resemble the Annam Ape, but the animals of this genus are accustomed to vary in such an extraordinary degree, that it necessitates bringing together a considerable number of examples before the specific value of any style of coloring in their coats can be determined. At present this Annam specimen in its coloring is unique. It seems to be nearest to H. LEUCOGENYS, from which it differs only in the color of sides of under jaw, throat and beneath chin, which is ochraceous instead of white.

HYLOBATES LEUCISCUS (Geoffroy).

Pithecus leuciscus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 89.

Hylobates leuciscus Kuhl, Beitr. Zool., 1820, p. 6; Desm., Mamm., 1820, p. 51; F. Cuv., Dict. Scien. Nat., XXXVI, 1825, p. 289; Less., Man. Mamm., 1827, p. 31; Griff., Anim. Kingd., V, 1827, p. 6; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 34, 7me Leçon; Fisch., Syn. Mamm., 1829, p. 12; G. Cuv., Règn. Anim., I, 1829, p. 90; I. Geoff., Bélang., Voy., Zool., 1834, p. 26; Müll., Tijdsch. Natuur. Geschied., II, 1835, p. 327; Schleg., Essai Phys. Serp., Pt. Gen., 1837, p. 237; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 78, pl. III B; V, 1855, p. 17, (Part.); Müll., Verhandl., 1839-44, p. 15; Less., Spec. Mamm., 1840, p. 51; Martin, Mammif. Anim., 1841, pp. 416, 417, 436; I. Geoff., Compt. Rend., XV, 1842, p. 716; *Id.* Cat. Primates, 1851, p. 7; *Id.* Archiv. Mus. Hist. Nat., Paris, 1852, p. 534; Schinz, Syn. Mamm., I, 1842, p. 31; Gray, Handb. Mamm. Brit. Mus., 1843, p. 2; Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, p. 465; XLIV, 1875, p. 4, ext. no.; *Id.* Cat. Mamm. Mus. Asiat. Soc. Beng., 1863, p. 5; Cantor, Journ. Asiat. Soc. Beng., XV, 1846, p. 173; Gerv., Hist. Nat. Mamm., I, 1854, p. 53, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 73; Reichenb., Vollständ. Naturg. Affen, 1862, p. 174, figs. 446-449; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 15; Forbes, Nat. Wander. E. Archip., 1875, p. 70; Schleg., Mus. Pays-Bas, Simia, 1876, p. 19; Anders., Zool. Res. Exped. Yunnan, 1878, p. 7; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 33; Thos., Proc. Zool. Soc. Lond., 1892, p. 227; 1893, p. 494; Forbes, Handb. Primates, II, 1894, p. 154; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 575, Zool. Ser.; Thos. and Wrought., Proc. Zool. Soc. Lond., 1909, p. 372.

Hylobates javanicus Matschie, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1893, pp. 62, 210.

WAU-WAU GIBBON.

Type locality. None given.

Geogr. Distr. Java.

Color. Uniformly gray, top of head blackish occasionally.

Measurements. Skull: occipito-nasal length, 85; Hensel, 66; zygomatic width, 62; intertemporal width, 44; median length of nasals, 10; length of upper molar series, 24; length of mandible, 64; length of lower molar series, 27. juv.

This species is confined to Java, a style resembling it somewhat is found in Borneo, being only one of the variations exhibited by H. CONCOLOR. This species varies less than many of its relatives, and this is confined mainly to the extent of the black cap on the head. The Bornean gray variety sometimes has a faint blackish cap also varying in size and in depth of hue, but I have never seen any having a jet black cap as is witnessed in Javan examples. Herr Matschie supposing the gray form of H. CONCOLOR to be a distinct species and the typical H. LEUCISCUS renamed the Javan animal *H. javanicus,* differing from the Bornean gray form on account of the black cap. But the original H. LEUCISCUS came from Java, and if there was a specific difference between it and the Bornean animal, it was not the Javan ape that should have received a new name. However as Mr. Hose's testimony, (reproduced in the article on H. CONCOLOR), shows, the Bornean gray Gibbon Ape is not a distinct form, but only exhibits one of the many phases of color of H. CONCOLOR.

Schreber has frequently been quoted as the describer of this form, but he makes no mention of it whatever in his work, and the plate IIIB is not Schreber's, but a supplementary one of Wagner, who attributes LEUCISCUS to Schreber, (1840, p. 78), without, so far as I can discover, any reason whatever for so doing. The first description given of the species appears to be that of E. Geoffroy (l. c.).

HYLOBATES AGILIS F. Cuvier.

Pithecus lar (nec Linn.), E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 88.

Hylobates agilis F. Cuv., Hist. Nat. Mamm., 1821, pls., V, VI; *Id.* Dict. Scien. Nat., XXXVI, 1825, p. 288; Less., Man. Mamm., 1827, p. 31; Temm., Mon. Mamm., I, 1827, p. 13; Griff., Anim. Kingd., V, 1827, p. 7; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 34, 7me Leçon; G. Cuv., Règn. Anim., I, 1829, p. 90; Yarr., Zool. Journ., V, 1835, p. 137; Müll., Tijdsch. Natuur. Gesch. Phys., II, 1835, p. 326; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, 2nd ed., p. 3; Blyth, Journ. Asiat. Soc. Beng., X, 1841, p. 838; XIII, 1844, p. 465; XLIV, 1875, ext. no. p. 3; Martin, Mammif. Anim., 1841, pp. 416, 417, 425, pl.; Gray, Handb. Mamm. Brit. Mus., 1843, p. 2; Müll. und Schleg., Verhandl., 1839-44, p. 48; Cantor, Journ. Asiat. Soc. Beng., XV, 1846, p. 173; Fry, Proc. Zool. Soc. Lond., 1846, p. 11; *Id.* Ann. Mag. Nat. Hist., XVII, 1st Ser., 1846, p. 484; I. Geoff., Cat. Primates, 1851, p. 7; Gerv., Hist. Nat. Mamm., I, 1854, p. 53, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 78, pl. III, fig. 9; Gray, Proc. Zool. Soc. Lond., 1861, p. 212; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 12; Reichenb., Vollständ. Naturg. Affen, 1862, p. 172, figs. 432-436; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 17; Anders., Zool. Res. Exped. Yunnan, 1878, p. 9; *Id.* Cat. Mamm. Ind. Mus. Calc., 1881, p. 31; Forbes, Handb. Primates, II, 1894, p. 151; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 575.

Pithecus agilis Desm., Mamm., 1820, p. 532.

Simia lar (nec Linn.), Raffles, Trans. Linn. Soc. Lond., XIII, 1842, p. 222; Vig. and Horsf., Zool. Journ., IV, 1828-29, p. 106; Fisch., Syn. Mamm., 1829, p. 12, (Part.).

Hylobates lar (nec Linn.), F. Cuv., Hist. Nat. Mamm., 1824, pls. VII, VIII; *Id.* Dict. Scien. Nat., XXXVI, 1825, p. 289; Less., Man. Mamm., 1827, p. 30; Griff., Anim. Kingd., V, 1827, p. 5; E. Geoff., Cours Hist. Nat. Mamm., 1829, p. 33; G. Cuv., Règn. Anim., I, 1829, p. 90; Schleg., Essai Phys. Serp., Pt. Gén., 1837, p. 237.

Hylobates variegatus Temm., Man. Mamm., 1827, p. XIII; Müll., Tijdsch. Natuur. Gesch. Phys., II, 1835, p. 326; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 74; V, 1855, p. 16; Less., Spec. Mamm., 1840, p. 52; Blainv., Ostéog., 1841, Atl., pl. II; Müll., Verhandl., Indisch. Archip., 1841, p. 15; *Id.* Verhandl., 1839-44, p. 47; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 3.

Hylobates rafflesi Geoff., Cours Hist. Nat. Mamm., 1828, p. 34, 7me Leçon; *Id.* Bélang., Voy., Zool., 1834, p. 28; Müll., Tijdsch. Natur. Gesch. Phys., II, 1835, p. 326; Müll. und Schleg., Verhandl., 1839-44, p. 48; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 73; I. Geoff., Cat. Primates, 1851, p. 8; Gerv., Hist. Nat. Mamm., I, 1854, p. 53, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, pp. 74, 80; Reichenb., Vollständ. Naturg. Affen, 1862, p. 168, figs. 426-427; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 11; Selenka, Stud. Entw. Tier. Menschen Aff., 1900, Achtes Heft, pp. 182-187, figs. 19-24.

Hylobates unko Less., Spec. Mamm., 1840, p. 53.

Type locality. Unknown. Type in Paris Museum.

Geogr. Distr. Island of Sumatra.

Color. The type of H. AGILIS F. Cuvier, or one so styled on label and received in the Paris Museum in 1821, is yellowish white on head, upper parts and sides of body, limbs and hands; feet pale brown; throat and under parts of body pale ochraceous, or an orange shade; top of head tinged with buff. The specimen is doubtless faded and is much soiled with the dust of nearly a century.

Measurements. Skull: occipito-nasal length, 89; Hensel, 80; zygomatic width, 65; intertemporal width, 48; median length of nasals, 10; length of upper molar series, 25; length of mandible, 70; length of lower molar series, 28.

This is one of the most variable species of the genus HYLOBATES, and in color ranges from the typical yellowish white described above to jet black, with perhaps a narrow white superciliary stripe. These many variations, as is to be expected, have produced numerous synonyms, and not a little confusion, especially among the earlier writers who could not be cognizant of the fact that these striking differences were of no specific value, but merely evidences of individual eccentricities. Thus the melanistic style received the name of *rafflesi;* and another variable form that of *variegatus.* Like H. LAR, the index and middle toes are sometimes united by a web.

HYLOBATES PILEATUS Gray.

Hylobates pileatus Gray, Proc. Zool. Soc. Lond., 1861, p. 136, pl. XXI; Reichenb., Vollständ. Naturg. Affen, 1862, p. 174, figs. 482-484; Matschie, Sitzungsb. Ges. Natur. Freund., Berl., 1893, p. 209.

Hylobates agilis S. S. Flower, Proc. Zool. Soc. Lond., 1900, p. 313.

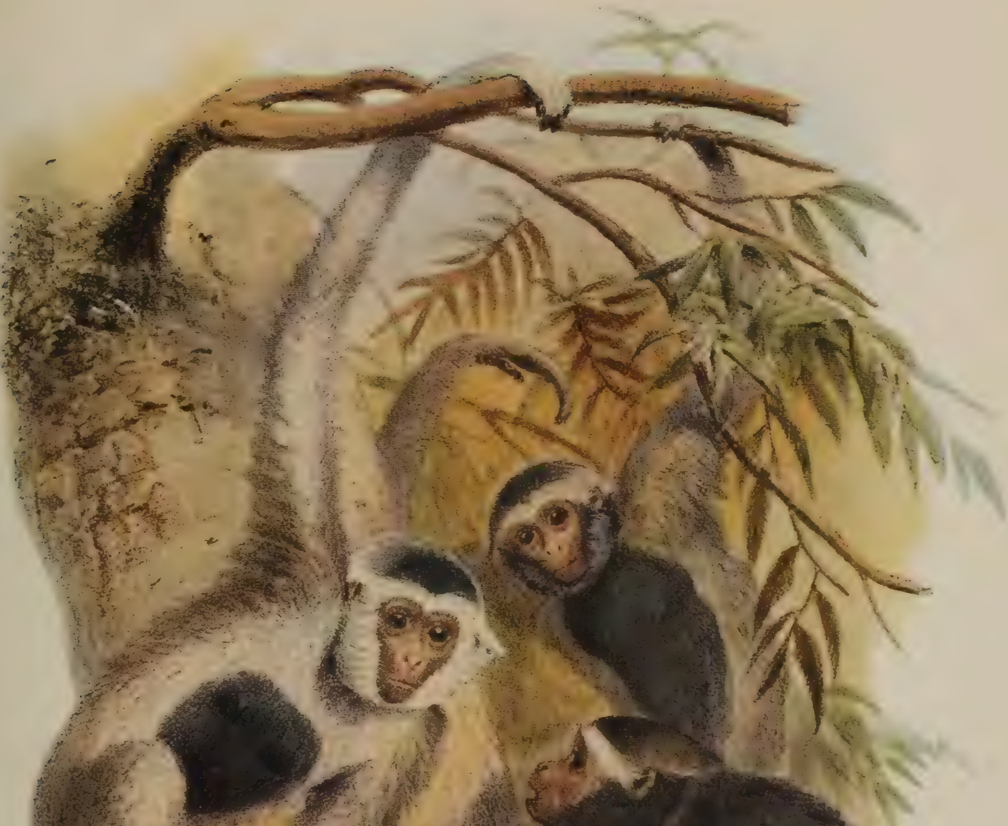
Type locality. Cambodgia. Type in British Museum?

Geogr. Distr. Cambodgia; Paknam Kabin, Siam; Cochin China.

Color. Top of head from forehead to rear of crown, sides of face before ears, throat and under parts of body to end of abdomen jet black; superciliary stripe, hairs around the black crown, and inner side of arms and legs yellowish white; rest of pelage grayish buff inclined to brownish on outer side of arms.

Measurements. Head and body, 440; foot, 150. Skull: occipito-nasal length, 86; Hensel, 75; zygomatic width, 60; intertemporal width, 48; median length of nasals, 9; length of mandible, 67; length of upper molar series, 25; length of lower molar series, 30.

This is another wonderfully varied species as regards the disposition and extent of the black. The description given above is



HYLOBATES PILEATUS

taken from the supposed type in the British Museum, a mounted specimen, as none marked Type was found. Other specimens in the collection, have black only on the crown, and from lower part of breast to end of abdomen; or on whiskers, spot on throat, chest and abdomen, all the rest of the pelage being brownish or pinkish buff above, and yellowish white on under parts; but no matter how much the black may have disappeared from the other parts of the body, the belly is apparently always of that color.

"At Paknam Kabin," says Flower, (l. c.) "in Siam, in 1897, there was a pet gibbon of the variety *pileatus,* said to have been caught in the neighborhood. Its color was buffy white, except the hair on the top of the head, which was black, and on its chest which was very dark gray. The skin of the face, and palms of the hands and soles of the feet were black."

HYLOBATES CONCOLOR (Harlan).

Simia concolor Harlan, Journ. Acad. Nat. Scien. Phil., V, Pt. I, 1827, p. 229, pls. IX, X, ♀. juv., read 17 Oct. 1826.

Hylobates concolor Schleg., Essai Phys. Serp., Pt. Gén., 1837, p. 237; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 79; V, 1855, p. 17, (Part.); Müll., Verhandl., 1841, p. 48; Blyth, Journ. Asiat. Soc. Beng., X, 1841, p. 417; Schinz, Syn. Mamm., I, 1844, p. 31; Fry, Proc. Zool. Soc. Lond., 1846, p. 15; *Id.* Ann. Mag. Nat. Hist., XVII, 1st Ser., 1846, p. 487; Temm., Hist. Nat. Mamm., 1854, p. 55, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 74; Anders., Zool. Res. Exped. Yunnan, 1878, p. 11; Everett, Proc. Zool. Soc. Lond., 1893, p. 493; Selenka, Stud. Entw. Tier. Menschen Aff., Achtes Heft, pp. 180, 181, figs. 14-18.

Hylobates harlani Less., Bull. Scien. Nat., XIII, 1827, p. 111.

Hylobates mülleri Martin, Mammif. Anim., 1841, p. 444; Temm., Coup d'œil Possess. Neerl., III, 1849, p. 403; I. Geoff., Cat. Primates, 1851, p. 7; *Id.* Archiv. Mus., V, 1852, p. 534; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1836, p. 73; Reichenb., Vollständ. Naturg. Affen, 1862, p. 172, figs. 430-431; Thos., Proc. Zool. Soc. Lond., 1892, p. 227; Everett, Proc. Zool. Soc. Lond., 1893, p. 493; Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 142.

Hylobates mülleri albibarbis Lyon, Proc. U. S. Nat. Mus., 1911, p. 142.

MÜLLER'S GIBBON.

Type locality. Borneo. Type of S. CONCOLOR Harlan, not in Philadelphia Academy.

Geogr. Distr. Borneo.

Color. Top of head, black; back of head and upper parts of body variable, gray, buff yellow or dark broccoli brown, and in this case the upper back, hind neck and shoulders are nearly seal brown; arms usually the color of the upper parts, grayish, seal brown or wood brown, with black on inner side; legs gray, buff or seal brown; side of head and under parts of body black; inner side of thighs black; of legs, similar to back.

Measurements. Skull: occipito-nasal length, 88; Hensel, 74; zygomatic width, 62; intertemporal width, 47; median length of nasals, 7; length of upper molar series, 24; length of mandible, 70; length of lower molar series, 28.

This is a most changeable species and it is quite hopeless to attempt to recognize distinct forms among the variously colored individuals. The animals from the south-eastern and north-western sides of Borneo, have been separated as *mülleri* and *concolor,* on account of the former having darker hands and feet and under parts; but this distinction does not hold good, and in the British Museum are specimens with light and dark hands and feet taken in the same locality, and the under parts are black or brownish black. Color in this species, as in some others of the genus, has no specific value.

The species has a gray phase, sometimes with a more or less distinct blackish cap and as this certainly has some resemblance to the Javan species, it was supposed that H. LEUCISCUS inhabited both islands. In respect to this Mr. Hose's testimony, given in his Mammals of Borneo, 1893, p. 60, of this species is interesting. He says, calling the animal *H. mülleri,* "this species varies from gray to dark yellowish brown, but the gray in certain lights appears pure ashy, and in others of a brownish tint. In some the chest and abdomen are frequently of a lighter color than the other parts, and of a brownish yellow, and this seems to be the character of individuals met with on the west coast of Borneo, while those inhabiting the meridional parts of the island have the hands and foreparts of the body of a black brown or reddish brown. In both of these varieties there is a yellowish white supercilium. The last of them leads into the *Hylobates* from the neighboring islands of Sulu to the northeast of Borneo, in which the upper parts of the body are either gray or brownish, the lower part of the back and loins being a little more clear than the rest.

Specimens of this Gibbon procured by me at Claudetown and now in the British Museum show that the coloring in different parts of the body must be considered of little importance, as I obtained eleven specimens, five of which were in the same troupe, and the other six from the same locality, varying in color as much as it was possible for them to do; some had yellowish backs and black chests, and some nearly black all over, whilst others were almost a complete silvery gray. I therefore came to the conclusion that *Hylobates mülleri* and *Hylobates leuciscus* cannot be separated. The peculiar bubbling noise they make is similar. I think it very unlikely that two distinct species should be so constantly found together as they are in Sarawak.

"The natives call the silver gray variety Emplian or Wa Wa, and the dark one Emplian-arang (coal) because of its color. The noise made by these gibbons is very pretty, commencing punctually at five o'clock in the morning and continuing till the sun is above the tops of the trees. They become very tame and make very nice pets."

In regard to Mr. Hose's decision that *H. mülleri,* (H. CONCOLOR of this work), and H. LEUCISCUS cannot be separated, it must be borne in mind that he is writing of the Bornean gray Gibbon that has been called *leuciscus* by some writers, and not Schreber's LEUCISCUS from Java, to which Mr. Hose does not refer. He is undoubtedly correct in referring to one species all the Gibbons seen and obtained by him in Borneo, but the true LEUCISCUS from Java has little resemblance to H. CONCOLOR, in fact none at all to the typical style, for the black and brown animal is not found in Java, and H. LEUCISCUS of that island has none of the variations so characteristic of the Bornean species.

This Gibbon was described by Harlan, most probably from an immature female, whose peniform clitoris misled him into characterizing his example as an "hermaphrodite ourang outan." (!) The type was imported from Borneo into New York in 1826, and lived for some time, and at its death was considered to be less than two years old. The teeth had not all appeared as there was but the first molar on each side of both jaws the second and third not having come. Harlan says there were three molars, but the first and second of these must have been premolars.

Trouessart in the Supplement to his Catalogus Mammalium, 1904-1905, in a footnote, states that CONCOLOR Harlan was applied to two different species of which the oldest was a young *H.* (*symphalangus*) *syndactylus,* and that the name *concolor* must be abandoned. In this, however, he is in error. Harlan never described any HYLOBATES in

1825, but in Part II of the same volume of the Journal of the Philadelphia Academy of Natural Sciences, bearing the date 1827, his paper on HYLOBATES occurs, but it is stated that it was read on the 17th October, 1826, as already mentioned. The type came from Borneo, and could not be referred to S. SYNDACTYLUS, of which Trouessart makes it a synonym, as that species is not found in Borneo, and moreover Harlan expressly states his specimen had no *gular sac,* which is a characteristic appendage of the Sumatran Gibbon. Lesson (l. c.) gave the name of *harlani* to H. CONCOLOR Harlan and states it came from Borneo, and copies mostly Harlan's account of the animal, falling also into his error in considering it an hermaphrodite. Lesson makes no mention of Hainan, and it is difficult to see how the name *harlani* could possibly be applied to the species from that island, as is done by Trouessart.

Dr. Lyon has separated the Gibbon, obtained by Dr. Abbott along the Mattan River, from H. CONCOLOR as a subspecies under the name of *H. mülleri albibarbis.* I had already examined Dr. Abbott's specimens, and, as the almost incredible variation of which the Bornean Gibbons are capable is very familiar to me, through the study of Mr. Hose's striking examples as well as of the many specimens scattered throughout the Museums of the world, I was unable to find any character that was reliable for separating individuals from different parts of the island. Dr. Lyon's characters are solely founded on color, which in the Bornean Gibbon especially, is not a character but purely an individual variation. Dr. Lyon found no difference whatever in the skulls, as was to be expected. I have placed the name among the synonyms of H. CONCOLOR.

HYLOBATES FUNEREUS (I. Geoffroy).

Hylobates funereus I. Geoff., Compt. Rend., XXXI, 1850, p. 874; *Id.* Cat. Primates, 1851, p. 7; *Id.* Archiv. Mus. Hist. Nat., Paris, V, 1852, p. 532, pl. XXVI; Gerv., Hist. Nat. Mamm., 1854, p. 53; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 18; Reichenb., Vollständ. Naturg. Affen, 1862, p. 174, fig. 445.

DARK GIBBON.

Type locality. Sulu Island? Type in Paris Museum.

Geogr. Distr. Islands of Sulu Archipelago?

Color. Eyebrows whitish; top of head, sides of head, throat, under side of body, and inner side of limbs blackish brown; rest of pelage, head, body, limbs, hands and feet, grayish white with a brownish tinge. Ex type Paris Museum.

The type is exactly like specimens of H. CONCOLOR except that the white band on the forehead is narrower; otherwise there is no difference to be seen. Until more specimens from the Sulu group of islands are obtained, it is perhaps best to leave it as a race of H. CONCOLOR.

HYLOBATES FUSCUS Winslow-Lewis.

Hylobates fuscus Lewis, Journ. Nat. Hist. Soc. Boston, I, Pt. I, 1837, p. 32, pls. I, II; Anders., Zool. Res. Exped. Yunnan, 1878, p. 11.

LEWIS'S GIBBON.

Type locality. "Vicinity of the Himalay Mountains."

Geogr. Distr. Unknown.

Genl. Char. "Upper canines reaching nearly to the mental foramina, the lower canines projecting upwards as far as the alveolar process of the lower jaw."

Color. "Dirty brown; face and hands black."

The habitat of this Gibbon is extremely uncertain. A male and female were purchased in Calcutta from the menagerie of a Rajah, who stated that he had obtained them from the "vicinity of the Himalay Mountains," a locality that might mean anywhere. The very brief description given is that contained in quotation marks. Anderson describes the canines as stated above, but does not say where he saw the cranium, and I have no information as to the present location of the specimens. It is extremely doubtful if the examples have any claim to a distinct rank.

GENUS II. SYMPHALANGUS. THE SIAMANGS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

SYMPHALANGUS Gloger, Hand u. Hilfsb. Naturgesch., I, 1841, pp. XXVII, 34. Type *Pithecus syndactylus* Desmarest.
Syndactylus Boitard, Jard. Plantes, Paris, 1842, p. 55.
Siamanga Gray, List Spec. Mamm. Brit. Mus., 1843, pp. XVII, 1.

Size large; skin of throat distensible overlying the large laryngeal sac, which is formed by the extension of the thyrohyoid membrane. Second and middle toes united by web as far as last joint. Skull large, supraorbital ridges more developed than in Hylobates; occipital region more truncate. Frontal lobes of brain flattened; olfactory bulbs extend forward beyond frontal lobes of the cerebrum; occipital lobes small; cerebellum projects from below the cerebrum backwards.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1820. *Desmarest, Mammalogie.*
Symphalangus syndactylus described as *Pithecus syndactylus.*

1903. *Miller, (G. S. Jr.), in Smithsonian Miscellaneous Collections.*
Symphalangus klossi first described.

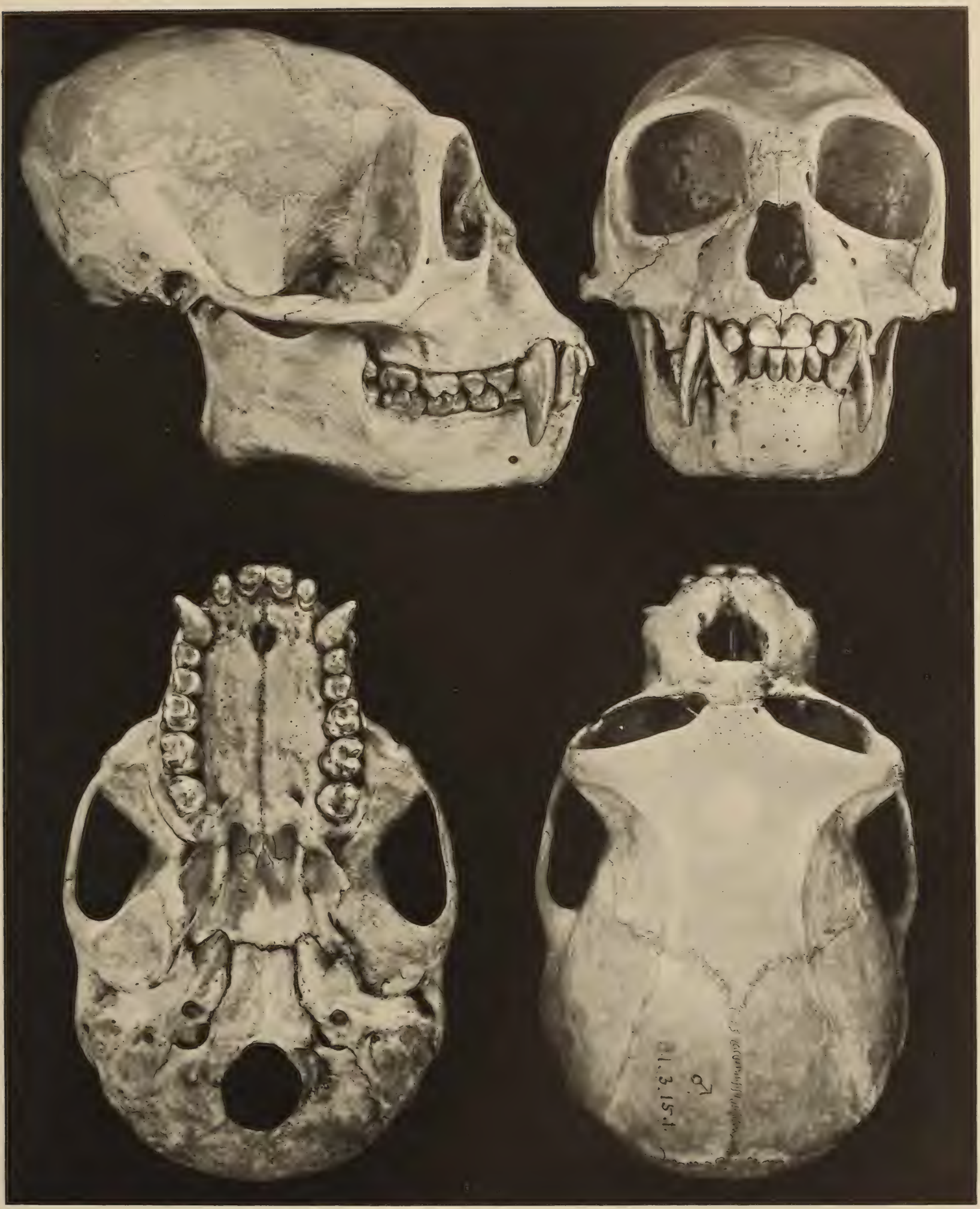
1908. *Thomas, in Annals and Magazine of Natural History.*
Symphalangus syndactylus continentis first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

Sumatra contains S. syndactylus, and *S. s. continentis* is found in the Malay Peninsula possibly as far north as Tenasserim. South Pagi Island off the west coast of Sumatra has *S. klossi.*

KEY TO THE SPECIES AND SUBSPECIES.

A. With laryngeal sac. Color all black.
  a. Size very large .... *S. syndactylus.*
  b. Size smaller .... *S. s. continentis.*
  c. Size very small .... *S. klossi.*



SYMPHALANGUS SYNDACTYLUS.

No. 81.3.15.1. Brit. Mus. Coll. ⅘ Nat. Size.

SYMPHALANGUS SYNDACTYLUS (Desmarest).

Pithecus syndactylus Desm., Mamm., 1820, p. 531; Less., Man. Mamm., 1849, p. 30.

Hylobates syndactylus F. Cuv., Hist. Nat. Mamm., var., 1821, pl. IV; *Id.* Dict. Scien. Nat., XXXVI, 1825, p. 287; Griff., Anim. Kingd., V, 1827, p. 6; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 34, 7me Leçon; F. Cuv., Règn. Anim., I, 1829, p. 90; I. Geoff., Bélang., Voy., Zool., 1834, p. 30; Bennett, Wander. N. S. Wales, II, 1834, p. 151; Müll., Tijdsch. Natuur. Gesch. Phys., II, 1835, p. 324; Schleg., Essai Phys. Serp., Pt. Gén., 1837, p. 236; Waterh., Cat. Mamm. Mus. Zool. Soc. Lond., 1838, p. 4; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 69; V, 1855, p. 15; Less., Spec. Mamm., 1840, p. 30; Sandif., Verhand. Natur. Geschied. Nederl., 1840; I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, 1841, p. 535; *Id.* Compt. Rend., XV, 1842, p. 717; Martin, Mammif. Anim., 1840, p. 420, pl.; Müll. und Schleg., Verhandl., 1839-44, pp. 15, 31, 33, pl. II, figs. 3-5, pl. VII, figs. 1-3; Blyth, Journ. Asiat. Soc. Beng., XIII, 1844, pp. 463, 474; XLIV, 1875, ext. no. p. 3; Schinz, Syn. Mamm., I, 1844, p. 28; Gerv., Hist. Nat. Mamm., I, 1854, p. 51, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 71; Flower, Nat. Hist. Review, 1863, p. 279, pl.; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 22; Anders., Zool. Res. Exped. Yunnan, 1878, p. 10; *Id.* Cat. Mamm. Ind. Mus. Calc., 1884, p. 24; Forbes, Handb. Primates, II, 1894, p. 166, pl. XXVI; Beddard, Proc. Zool. Soc. Lond., 1900, p. 1871; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 576, Zool. Ser.

Simia syndactylus (!) Raffles, Trans. Linn. Soc. Lond., XIII, 1822, p. 241; Horsf., Zool. Res., 1824, pl.; Fisch., Syn. Mamm., 1829, p. 11.

Siamanga syndactyla Gray, Cat. Mamm. Brit. Mus., 1843, p. 1; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 9; Horsf., Cat. Mamm. Mus. E. Ind. Co., 1851, p. 1; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, p. 71; Reichenb., Vollständ. Naturg. Affen, 1862, p. 165, figs. 419, 420.

SIAMANG GIBBON.

Type locality. Island of Sumatra.

Geogr. Distr. Malay Peninsula? (Wallace); Tenasserim? (Helfer); Sumatra.

Genl. Char. Size large; laryngeal pouch large; bare patch on throat; second and middle toes united by web up to first joint; supraorbital ridges of skull well developed, occipital region truncate. The brain in the young has the cerebellum completely covered by the cerebrum; but in the old animal the cerebellum projects beyond the cerebrum posteriorly.

Color. Black.

Measurements. Skull: total length, 139; occipito-nasal length, 104.5; Hensel, 101; zygomatic width, 92; intertemporal width, 56.7; median length of nasals, 12.8; length of upper molar series, 35.3; length of mandible, 94; length of lower molar series, 40.9.

If the *S. s. continentis* Thomas, eventually proves to be a distinct race of the Sumatran species, then it is not at all probable that this species is to be found anywhere on the Malay Peninsula.

The Sumatran animal is very large, in fact the greatest of all the Gibbons in size, and individuals from South Pagi Island and the Malay Peninsula differ from it only in size, and this is relative, the Malaccan Gibbon being intermediate, the one from South Pagi Island being the smallest.

Mr. Forbes (l. c.) gives an interesting account of one of these Gibbons he had in Sumatra from which the following is taken: "Its expression of countenance is most intelligent and often very human; but in captivity it generally wears a sad and dejected aspect, which quite disappears in its excited moods. * * * It will never put its lips to a vessel to drink, but invariably lifts the water to its mouth by dipping in its half-closed hand and then awkwardly licking the drops from its knuckles. It generally sits with its arms crossed over its chest, and its fingers overlaid behind its head. * * * Although it often inflates its laryngeal sac, it rarely gives utterance to more than a yawn-like noise or suppressed bark; but this dilatation has no reference apparently to its good or bad temper, although when very eager and impatient for anything, a low pumping bark is uttered. Every evening it makes with me a tour around the village square, with one of its hands on my arm. It is a very curious and ludicrous sight to see it in the erect attitude on its somewhat bandy legs, hurrying along in the most frantic haste, as if to keep its head from outrunning its feet, with its long free arm see-sawing in a most odd way over its head to balance itself, and now and again touching the ground with its finger tips or knuckles. That they can leap the great distances from tree to tree ascribed to them is no doubt an accurate observation; but they appear to be sometimes terror-stricken and unable to perform these feats to save their lives. During the felling of the forest near this village, a small colony of Siamangs got isolated on a tree separated from the next clump by some thirty feet or so. They scampered up and down in the crown of the tree howling in the most abject terror at every stroke of the axe; yet they would not venture to leap the intervening space, and even, when the tree was falling, they did not attempt to save themselves by springing on the ground but perished in its downfall. * * * During my march to the coast my Siamang accompanied me, occupying with the most grave demeanor a seat on one of the packages carried in the rear near to myself. Here it sheltered its head to the amusement of all whom we met, under a Chinese umbrella, which I had bought for it to protect it from the midday sun, and for which, after every halt, it held out its hands in the most knowing way, screaming lustily if the porters dared to move on before it had comfortably arranged itself. To my intense regret a misadventure put an end to a most charming existence before I could send it to London."

SYMPHALANGUS SYNDACTYLUS CONTINENTIS Thomas.

Symphalangus syndactylus continentis Thos., Ann. Mag. Nat. Hist., II, 8th Ser., 1908, p. 30.

Hylobates syndactylus Flower, Proc. Zool. Soc. Lond., 1900, p. 313, ex Malay Peninsula.

Type locality. Gemangko Pass, Selangore, Padang Boundary, Straits Settlements. Altitude 3,000 feet. Type in British Museum.

Color. Black. Ex type British Museum.

Measurements. Head and body, 846; hind foot, 164; ear, 34. Skull: total length, 43.9; occipito-nasal length, 127.1; intertemporal width, 107.5; breadth of braincase, 62.6; Hensel, 89.6; zygomatic width, 86.6; median length of nasals, 11.9; palatal length, 47.8; length of upper canines, 22.3; length of upper molar series, 32.9; length of mandible, 87.5; length of lower molar series, 40.7. Ex type British Museum.

This animal in outward appearance is exactly like the Sumatran species, the only difference being that the skull is slightly smaller, with the corresponding reduction in its various parts. The tooth row is shorter, but of the two skulls of this race as yet obtained, the difference in the length of their tooth rows is as great as is that between the longest of them and that of the Sumatran Ape; and they are all adult individuals if not even aged. It requires a large number of crania from the continent and from Sumatra to decide whether or not a separation, even of a racial kind, between the two is required.

Captain Flower states, (l. c.) that "no gibbons are found wild in the islands of Penang or Singapore, though they are very generally distributed over the mainland; when met with in the jungle it is very hard to identify the species, and it is of little use and cruel to attempt to shoot them with a shot gun; if a specimen be needed, kill it with a rifle-bullet. In September 1897, at the foot of Gunong Pulai in Johore, I saw both black and white gibbons of apparently the same species, but I cannot say which. In March 1897 near Tahkamen, Siam, there were many in the high trees in the thick jungle; their call was loud and musical, 'Pua, pua, pua, pua, pua, pua,' beginning slowly and gradually getting faster. One morning we followed up an individual for a long time; it was a very large black gibbon, extremely agile. Occasionally it progressed by running along the boughs, but generally by swinging by its hands; every now and then it leaped down vertically to a great depth among the branches, as if falling, but it never actually came to the ground. In the forest of the Dong Phya Fai (between Ayuthia and Korat), at about 900 feet elevation, I have heard gibbons making a great noise in the early morning; judging from the cry, I should say it was the same species heard at Tahkamen."

SYMPHALANGUS KLOSSI Miller.

Symphalangus klossi Miller, Miscel. Coll. Smith. Inst. Wash., 1903, p. 70.

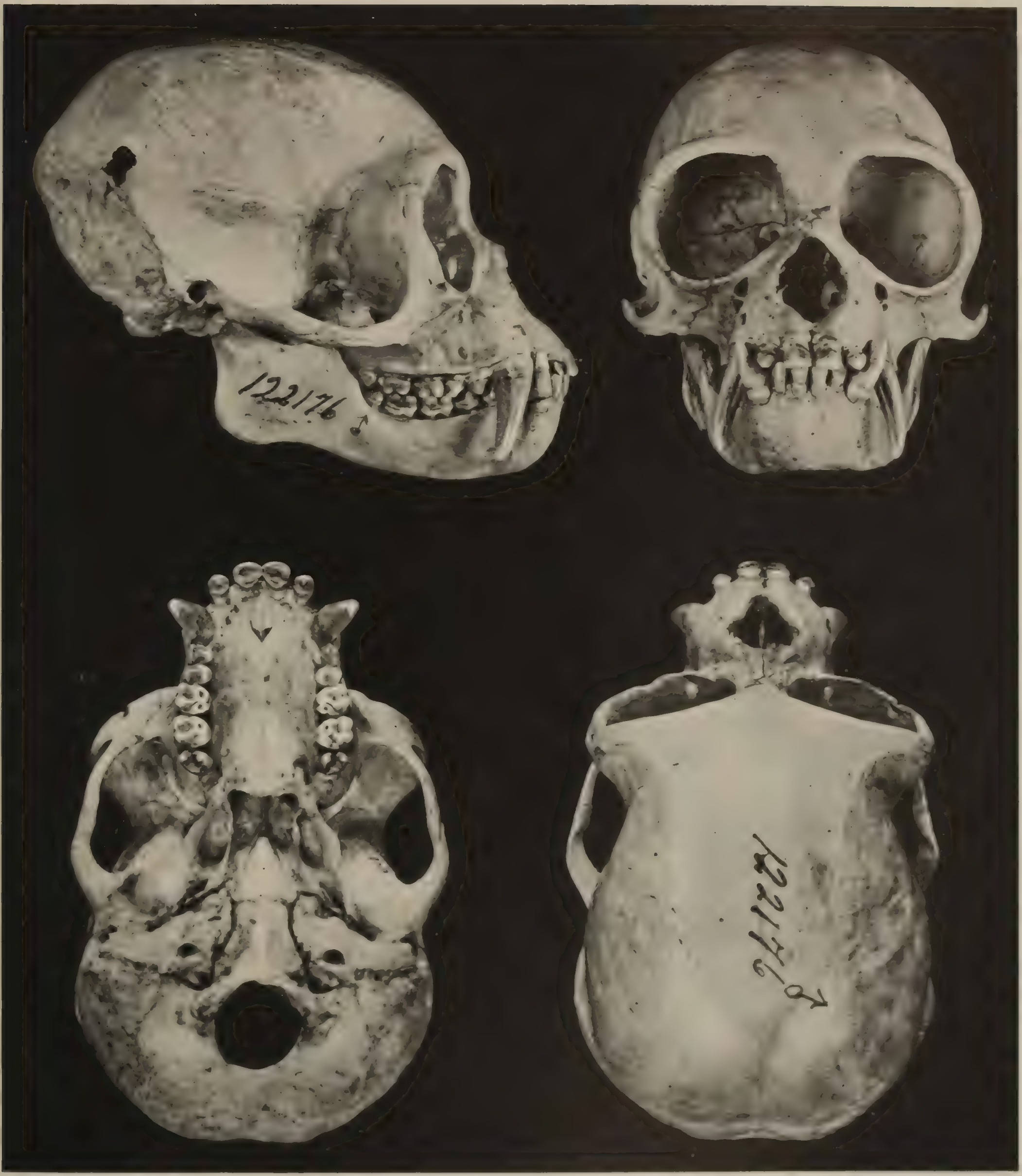
Type locality. South Pagi Island, west of Sumatra. Type in United States National Museum.

Genl. Char. Size small; color as in S. SYNDACTYLUS.

Color. Black everywhere. Ex type United States National Museum.

Measurements. Total length, 440-525; foot, 130-154. Skull: total length, 96; occipito-nasal length, 80.7; Hensel, 68.1; zygomatic width, 63.4; intertemporal width, 45.3; palatal length, 36.8; median length of nasals, .91; length of upper molar series, 22.5; length of mandible, 66.5; length of lower molar series, 27.3. Ex type United States National Museum.

This is a very small form of the Siamang, differing from it in no respect save in size.


122176 ♂
122176 ♂

SYMPHALANGUS KLOSSI.

No. 122176 U. S. Nat. Mus. Coll. ⅘ Nat. Size

FAMILY *PONGIIDÆ.

GENUS I. PONGO. OURANG-UTAN.

$$I.\ \frac{2-2}{2-2};\quad C.\ \frac{1-1}{1-1};\quad P.\ \frac{2-2}{2-2};\quad M.\ \frac{3-3}{3-3}=32.$$

PONGO Lacépède, Tabl. Mamm., 1799, p. 4. Type *Pongo borneo* Lacépède = *Simia pygmæus* Hoppius.

Pithecus G. Cuv., Tabl. Element. Hist. Nat. Anim., 1798, p. 95; *Id.* Leçons Anat. Comp., 1800, tab. I, (nec Geoff. and Cuvier, 1795).

Lophotus Fisch., Zoogn., II, 1813, pp. IX, 547.

Faunus Oken, Lehb. Naturg., 3ter Theil. Zool., 2te Abth., 1816, pp. XI, 1227, (nec Montfort, 1810, Mollusca).

Macrobates Bilb., Syn. Faun. Scandin., I, Mamm., 1828, Conspectus A.

Body heavy, stout; neck short, thick; face naked; lips broad, mobile, protrusive; arms very long, hands reaching to ankles when animal is erect; hands long, narrow; thumb short; fingers united by web; legs short, bowed; foot long, narrow, great toe short; cheek callosities sometimes present in adult male; tail absent.

Skull: high, pointed; supraorbital ridges prominent; cranial ridges present; canines tush-like; upper molars have four cusps, the lower molars five.

Satyrus "Linn.," has been included by Palmer in his "Index Generum Mammalium" on the authority of Sherborn. Linnæus, however, was not the Author of *Satyrus* but Hoppius in the Amœnitatis Academicæ p. 69, and it was not employed by him as a genus, but as a specific name, for the second species of Simia, the first being his S. PYGMÆUS founded on Edwards' plate. Hon. Walter Rothschild in his paper, Proc. Zool. Soc. Lond., 1904, p. 421, gives *Satyrus* Less., 1799? as co-equal with PONGO Lacépède, 1799. There must be an error here as Sherborn does not give *Satyrus* Less., at all, and Palmer gives

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*The type of Simia being the "Barbary Ape," a baboon, Simiidæ cannot be employed as a Family name for the Great Apes, and Pongo, being the oldest generic name proposed for these animals must be taken for the Family name, and PONGIIDÆ will therefore be the correct term.

Satyrus Less., no earlier than 1840. Linnæus is not the Author of any paper in the Amœnitatis Academicæ and a *Satyrus* Linn., as a genus does not exist any more than does Lesson of 1799. Pongo Lacépède therefore antedates all others. Of all the members of the *Pongiidæ,* the Ourang occupies the lowest position and is the farthest removed from man. The skull, in the adult male, with its narrow, lengthened braincase of limited capacity, frequently possessed of a high, long, compressed crest, the protuberant jaws and great canines, the arms, immoderately lengthened, with the fingers reaching to the ankles when the animal is erect, fitting it essentially for an arboreal life, and causing it to become nearly helpless for terrestrial progression, and the short and comparatively feeble legs, all proclaim it the lowest of the great Apes. The number of pairs of ribs is twelve, thus differing from the Gorilla, and resembling the Chimpanzee and Man. The *ligamentum teres* which binds the head of the femur into its socket is not present, thus giving a much more free movement to the limb in climbing; but acts disadvantageously when the creature attempts the erect posture. The cranial capacity of the Ourang's skull is less than either of the other Apes, and compares as follows: Gorilla male, 34.5 cubic inches; Chimpanzee male, 27.6 cubic inches; Ourang male, 26 cubic inches; and considering the relative size of the different crania, the skull of the Chimpanzee has proportionately the largest brain; and Owen states, that the "Hottentots and Pappuans of Australia have the smallest cranial capacity amongst the Human races; but that the largest capacity yet observed in the adult male Gorilla is less than one half the mean capacity of those Æthiopian races."

The Ourang has no uvula, but has large expansions of the lateral cavities of the larynx, and these extend from the throat as far as the axillæ, and in some old males these swellings or extensions of skin beneath the chin, cause the animal to appear as if suffering from a severe case of goître. I shall have occasion to refer to the great dissimilarity existing among the crania of the Ourang, and so many and equally important differences exist in other portions of its structure, that Owen has summed up his great review of the osteology of this Ape in the following significant language: "When we review the varieties already recorded, in the large Orang (*Pithecus satyrus*) of Borneo and Sumatra, especially in regard to the presence or absence of the nail and its phalanx in the halux, the occasional supernumerary molar tooth, the length of arm, the intermuscular ridges and crests of the skull; the shape of the orbits; the size and other conditions of the nasal bones; the fore-and-aft extent of the molar series, and the profile contour of the skull; we derive additional proof that the *Simia Satyrus of Linnæus* (!) *is subject to a greater amount of variety in the state of nature, than has hitherto been observed in any other Quadrumanous species."* The italics are Owen's. With such variations existing, and no cranial characters, or particular coloration of the fur pointing to a specific separation, the creation of distinct forms of Ourangs is at best, but a doubtful procedure, for all the indications we have in both skins and skeletons seem to point to but one existing species of this Ape in both Borneo and Sumatra; but one having almost unlimited cranial variations in the adult male.

The brain of the Ourang, like those of all Quadrumana acquires its full development before the second set of teeth is completed.

The only large collection of Ourang skulls in Europe, or in fact anywhere, is the one procured by Herr Selenka and brought with him to Munich. Herr Selenka did not himself go into the interior of Borneo, but made his headquarters at Pontianak on the west coast, and very few of his specimens were collected by himself, but were procured for him by native hunters chiefly. The entire material consisted of several hundred skulls and a considerable number of skins, but these last were very much fewer than the crania, for it would seem as if Herr Selenka attached much more importance to the skulls than he did to the outside covering of the animals. This material formed the basis for the various papers written by Herr Selenka on the Ourang, and with which Zoologists are familiar. It was therefore with great hopes of clearing up various difficult points, and especially arriving at a satisfactory conclusion as to the validity of the variously described species, that I went to Munich to examine the collection. It was in the Anthropological section of the Academy, but, alas, it was not the collection that Selenka brought back with him, for he had sold all the skins, probably to dealers, for no one knows where they went, nor what has become of them, it is only known they have most effectually disappeared. About 280 of the skulls were sold to the Department of Anthropology, and these are all that remain of the collection. The first thing that one notices on examining this series of skulls, is how few there are of old adult males, the great majority of them being those of young animals, many very young, and females, some adult. Another fact that impresses one is that not a single skull in the entire collection has any particular locality attached to it. It may have been that Herr Selenka did not pay much attention to particular localities, or not being able to verify them himself, as he did not go into the interior, he may have been aware that he could not place implicit trust upon the native hunters. And in this he would be fully justified, for those of us who have had experience with native collectors in savage lands, know perfectly well that the localities they give their specimens cannot often be relied upon. However this may be, these Ourang skulls are without any particular locality, but simply have marked on them a letter to indicate the district from which each one supposedly came. Thus *S.* stands for Skalau District; *B.* for Batangtu; *D.* for Dadapai; *G.* for Genepai; *L.* for Landak; *R.* for Rantau; and some half dozen were found, all very young skulls, to represent the races he called *tuakensis, obongensis,* and *wallacei.* Another fact in regard to these skulls, was the infinite variations they exhibited. No two in the 280 were alike, and even some from the same locality, or at all events the same district, varied to an amazing degree. A study of this material proved that an attempt to establish species upon cranial characters would be futile, and it may be for that reason Herr Selenka did not attempt it, but endeavored to found his species upon the cubical dimensions of the interior of the braincase, about as hopeless a proceeding, as to try to subject the endless variations of the rest of the crania to some degree of uniformity. This was the only material available for the determination of species, and other interesting points connected with the Ourang-utan. A large series of crania, the largest in existence, mostly those of very young animals, and females, only a few of the latter being adult, and some old adult males, (of these last I was able to select eighteen out of the lot), none of which had a particular locality given to it, *and no skins for any of them.* The outlook was far from encouraging, but the material was the best in existence, lamentably defective as it was in most important points. Nothing could be done towards the solution as to the cause of the presence or absence of callosities, and although we knew from Selenka's statements, that individuals with and without callosities were obtained in the same districts, the skulls gave no sign as to whether they had been present or not.

Herr Selenka bases his species mainly upon the cubical dimensions of the interior of the braincase, and upon certain theories, for much of which he has produced no proofs. According to his own tables, cubical dimensions are very unsatisfactory characters, for rarely do two crania agree in their dimensions, and we must regard this method as one quite unsuitable *per se,* for the determination of the species. His theory is as follows: Borneo is intersected by wide and deep rivers, and since Ourangs can neither swim rivers, nor climb mountains, they are hemmed in on sections of land as if on islands, and thereby prevented from mingling with their kind in other portions of Borneo. Let us consider this idea a moment and see if it is sufficiently correct and forcible to merit acceptance. As far as Europeans have ascended the rivers of Borneo, it is, I believe, a fact, that Ourangs have been seen in the forests along the banks, but there is no proof that they may not be dispersed throughout the forests far into the interior, the conditions being the same. It is probably quite correct to say that Ourangs cannot swim wide and deep rivers near their mouths, but higher up, where the width is less, and the water shallow, and where the trees possibly overarch the stream, Ourangs can cross and join their fellows on the opposite side. It is not unreasonable to suppose that they often do this, and in the dry season it is probable that the rivers are very low, and some possibly almost dry. Then the objection that they cannot climb mountains, and that these would prove an insurmountable barrier in their path. This is a curious statement coming from one who has described a species or race as new, living upon a mountain and in its vicinity, *dadappensis*! But we know, on the testimony of Wallace, given farther on, that Ourangs can, and do, climb mountains. It is probably a fact that if a steep mountain is bare of trees the Ourang could not ascend it, and very likely would not try, but if it were covered with forests the animal would find no difficulty in reaching the top, and Borneo is a forest covered island with possibly only a few of the highest peaks bare of trees. Wallace, moreover, states the fact, that in the Sadong Valley District, there are many isolated mountains which the Dyaks have covered with fruit trees, and the Ourangs ascend these to feed on the unripe fruits, retiring to the low swamps at night. It will thus be seen that both Herr Selenka's method and theories for establishing his species are subject to grave objections, and are not sufficiently satisfactory in the one case, nor probable in the other, to merit general acceptance.

Now for consideration of the species described by him. And first there are no types; that is to say, Herr Selenka did not select any particular specimen as THE representative of a species. With the Ourangs, however, this is not of supreme importance so far as the skulls are concerned, because, if Selenka had selected any particular one for his type, it would be found not to agree in its characters with any other, so infinite are the individual variations of the crania in a large series of examples. All the skulls therefore from a certain district must be taken for consideration, as representing a type with all its variations, and exhibiting the general characteristics of the form found in that particular section of Borneo. It must be borne in mind, however, that the part of Borneo from which Herr Selenka obtained his material is a very limited area of the island, entirely too small to possess any considerable number of species of Ourangs, especially as it is well covered with forests through which the Apes could travel as they chose, and there are no ranges of lofty mountains to act as barriers to their progress. Yet in this comparatively small district he describes seven races as distinct, viz.: *P. s. landakensis, P. s. batangtuensis, P. s. dadappensis, P. s. genepaiensis, P. s. skalauensis, P. s. tuakensis,* and *P. s. rantaiensis.* Of these *batangtuensis* was supposedly previously described, and the remainder are all antedated by PONGO PYGMÆUS Hoppius for the reasons hereafter given. After a careful examination of these skulls, (no skins being available), and witnessing the almost incredible variations exhibited, and which are not confined to any locality, skulls from the same place differing as greatly from each other as they do from those in another district, and finding no character common to all of them, or even to a few of them, which can be regarded as indicating specific distinction, I was forced to the conclusion that these variations are simply individual, and may not in any degree be regarded as indicating a specific value. I could find nothing in this large series of crania which would distinguish those of one district, as a whole, from those of any other, and if a cranium from one locality exhibited some marked difference from others from another place, it would be found that its mate from the same district would not agree with it in this particular point. Failing therefore to discover any cranial character by which any kind of distinction could be established, I was obliged to conclude that but one species of Ourang was represented in this collection from Borneo.

With regard to the cheek callosities, found only on old adult males, I do not believe these indicate a specific character, or are even dimorphic, as the Hon. Walter Rothschild has considered them to be in his paper. It has been proved that Ourangs with and without callosities are found in the same district, Selenka so states, and material otherwise received from Borneo confirms the fact. It is not to be believed that two distinct forms inhabit the same range of country characterized only by the presence or absence of these peculiar formations. It is not reasonable to think so. Then callosities are confined to some old males only, and among these, such growths vary greatly in size. The skulls, as I have said, give no indication either of the presence or absence of these callosities, and if one had to depend upon them alone, he would be totally unable to know in which group the former owner of any skull should be placed. Instead of indicating a distinct race, or being dimorphic, of which there is at present no proof whatever, I am inclined to regard the callosities as an individual characteristic of some old adult males varying greatly in extent, but not always present; and I see no reason whatever to give them separate names on account of the presence or absence of these growths, as has been done, or to recognize them in any way as representing separate forms.

I have seen no specimens of a small adult Ourang from Borneo, which could be regarded as representing a distinct species such as is indicated in the *Pithecus morio* Owen. There may be a dwarf Ourang, as there is a dwarf gorilla-like Ape, but at present it is not represented in any Museum so far as I am aware.

Wallace mentions a specimen killed by him as having been deposited in the British Museum, but I did not see it. It was, he said, about "one-tenth smaller in all its dimensions than the other adult males, and had no sign of the lateral protuberance on the face." These can hardly be considered sufficient 'differences' upon which to base a distinct species, and would not be likely in a series of skins to attract attention, and the differences mentioned by Prof. Owen are such as may be easily found in the variable crania of Ourangs.

Of *P. s. wallacei* (l. c.), Herr Selenka had no especial knowledge, but applied the name to the form from Sarawak, which would make it a synonym of his *P. s. landakensis*. Of the Sumatra Ourangs Herr Selenka gives names to two, *deliensis* which becomes a synonym of *S. abelii* Clark, (if this latter is distinct from the Bornean Ourang); and *obogensis,* which is a *nomen nudum,* as he gives no description having never seen a specimen, his only knowledge of the animal having been derived from the accounts told him by the natives. The animal, however, would probably be the same as *S. bicolor* I. Geoffroy, of which *obogensis* would be a synonym.

In a collection of 50 Ourang skins received at the Munich Academy from one locality, as I understand, in Borneo, the majority of which, as is always the case, were immature individuals, there was but one male that had cheek callosities, which would certainly be a rather extraordinary fact, if these growths did not represent merely an individual peculiarity to which no specific value could be attached.

The question now arises, what is the proper name for the Bornean Ourang-utan?

The name SIMIA PYGMÆUS was first published in the "Amœnitates Academicæ" (l. c.) 1763, VI, p. 69, by Christianus Emmanuel Hoppius upon a description and colored plate of an Ourang published by Edwards in his 'Gleanings of Natural History.' Hoppius never saw the specimen, and certainly had no knowledge whence it came any more than did Edwards, who supposed its native country was Africa, (p. 7), and Hoppius repeats this. Edwards' specimen, which he states was then in the British Museum, and formerly belonged to the Sloane Museum, (but is no longer there), was a young animal, possibly not more than a year old, and only two feet high, (hence the name *pygmæus*), and had been "soaked in spirits" and had to be dried before a drawing could be made of it, and he states it was covered with reddish brown hair. Hon. Walter Rothschild in his paper in Proc. Zool. Soc. Lond., (l. c.) says this specimen of Edwards' had no cheek callosities, which was a self evident fact, as the animal was far too young to produce any such appendage.

The above short history is all that is known of *Simia pygmæus*, whether it was a native of Borneo or Sumatra cannot be said, though at the date Edwards wrote, it would be more likely to come from the latter island than the former. It is impossible to form any idea as to what species it represents if the Sumatran and Bornean Ourangs should prove distinct, for Edwards' figure gives no clue, and the species is quite undeterminable, and the name PYGMÆUS cannot be maintained unless the Sumatran and Bornean Ourangs should be proved the same, in which case PYGMÆUS, having been given to an Ourang, would have precedence.

It will be seen from the above, Linnæus had nothing to do with the bestowal of the name PYGMÆUS.

Schreber in his Säugthiere, gives a figure, uncolored, of an Ourang on plate II c, with the name *Simia agrias* at the bottom. This Author, however, never described an Ourang by that name, but in a footnote on page 65, in a quotation from Herodotus the word appears, "*αγριαι ανδρεσ και γυναίκεσ αγριαι.*" The figure is that of a very young animal, and appears to have been preserved in spirits.

Rothschild says it has cheek callosities, but there is not a vestige of these growths visible, the specimen was too young to produce them, and moreover appears to have been a female!

Wagner places his *Simia agrias* on page 56, vol. V, among the synonyms of *Simia satyrus* = PONGO PYGMÆUS. Tiedemann, Zool., 1808, p. 329, bestowed the name *wurmbi* upon an Ourang from Borneo in the possession of, and described by Frederic v. Wurmb, (Verhandl. Batav. Genootsch. Deel 2, B1. 245). Von Wurmb's description indicates very clearly an Ourang, and Tiedemann, who probably knew the animal only from Von Wurmb's description, never having seen it himself, in his own diagnosis sadly confuses two or more genera of the Primates together, and among other things says that his *Pongo wurmbi* has "Bakentaschen und Gesatrschwielen." Now no Anthropoid has cheek pouches, and only HYLOBATES has very small hind callosities, but the expansion of the skin on the throat may have been mistaken for a pouch, otherwise Baboons and Apes have been mixed together. As, however, there seems to be no doubt that *P. wurmbi* was an Ourang, the name to be applied to the Borneo species would be that bestowed by Tiedemann, if it should hereafter prove not to be the same species as the Sumatran Ourang, whose name would then be *abelii.*

Simia satyrus Linn., 1766, cannot be employed, because the name was given by him to a species of Chimpanzee, in the 10th edition of his Systema Naturæ, 1758, p. 25.

LITERATURE OF THE SPECIES.

Bornean Ourang.

1763. *Hoppius, in Amœnitates Academicæ.*
PONGO PYGMÆUS first described as *Simia pygmæus.*

1766. *Linnæus, Systema Naturæ.*
PONGO PYGMÆUS renamed *Simia satyrus.*

1808. *F. Tiedemann, Zoologie.*
In this work an Ourang from Borneo was named *Pongo wurmbi* = P. PYGMÆUS Hoppius.

1812. *E. Geoffroy St. Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
In his Tableau des Quadrumanes this Author places the Ourang in two different genera, each genus having one species of this great Ape. Pithecus, "tête ronde, bras longs," with *P. satyrus* = PONGO PYGMÆUS, and also including in the same genus three forms of HYLOBATES. The second genus is PONGO, "tête pyramidale, longs bras"; with one species *P. wurmbi* = P. PYGMÆUS. The characters of the genera *'tête rond'* and *'tête pyramidale'* are of no distinctive value, representing as they do merely differences of age, or possibly sex.

1826. *Clark, in Asiatic Researches, Calcutta.*
The Sumatran Ourang is here called *Simia abelii.*

1836. *R. Owen, in Proceedings of the Zoological Society of London.*
A female PONGO PYGMÆUS described as *Pithecus morio.*

1841. *I. Geoffroy, in Archives du Muséum d'Histoire Naturelle, Paris.*
A young Sumatran Ourang is here named *Simia bicolor.*

1851. *I. Geoffroy St. Hilaire, Catalogue des Mammifères.*
Two species of Ourang are recognized under the genus *Simia: S. satyrus* Linn., and *S. bicolor* I. Geoff., both = PONGO PYGMÆUS Hoppius.

1853. *Blyth, in Journal of the Asiatic Society of Bengal.*
P. PYGMÆUS is here redescribed as *Pithecus brooki,* and *Pithecus oweni.*

1855. *Blyth, in Journal of the Asiatic Society of Bengal.*
PONGO PYGMÆUS redescribed as *Pithecus curtus.*

1856. *R. Owen, in Transactions of the Zoological Society of London.*
In this paper the Author compares the skull of an Ourang from Borneo, which he named *P. morio,* with those of the *P. satyrus* Linn., (1766), = PONGO PYGMÆUS Hoppius; and is not convinced that it represents a distinct species, for in his concluding remarks he says, "As to the primitive originality of the *Pithecus morio* in Borneo, I by no means entertain a decided opinion. Had the whole dental series been proportionally smaller, as it is in the *Troglodytes niger* in comparison with the *Trogl. gorilla,* there might have been more reason for concluding as to the distinction of the species."

1869. *A. R. Wallace, The Malay Archipelago.*
In this work the Author gives a full and interesting account of the habits of the Ourang, as observed by him in Borneo.

1896. *Selenka, in Sitzungsberichte Königliche Akademie der Wissenschaften, Berlin.*
In this paper the Author describes the species and races he recognizes, establishing them upon the large collections of these animals obtained by him "on the right side of the river region of the Kapus"; founding his conclusions on "some variations of skull formation and on the milk and permanent teeth of these animals." In this restricted district he establishes six races as follows: *Pithecus satyrus landakensis; P. s. dadappensis; P. s. genepaiensis; P. s. skalauensis;* and *P. s. tuakensis;* all = PONGO PYGMÆUS Hoppius, according to the investigations of the writer, who could find no characters sufficiently distinctive in Selenka's material in the Munich Museum by which these forms could be established, the variations being so great as to make it difficult if not impossible to find two skulls that agreed in their individual peculiarities.

From Sumatra his material was much less extensive, and all of it was obtained from the Langkat District. He recognized one species *Pithecus sumatranus,* and two races, *P. s. deliensis,* and *P. s. obongensis.* At present the writer considers all these the same as PONGO PYGMÆUS, the material thus far obtained not being sufficient for establishing distinct forms, the variations existing both in the color of the fur, and in the crania, even in individuals from the same locality, being too great to permit the selection of any specimen as possibly representing a distinct form. Like Bornean examples, some old males possess cheek callosities, others, equally old, not having them. But if at some later day more ample material proves that the Sumatran Ourang is distinct from the Bornean, then these races and species named by Selenka must be known as *Pongo abelii* (Clarke).

1898. *Selenka, Studien uber Entwickelungsgeschichte der Tier, Sechstes Heft, Menschenaffen.*

The various races given in the previous paper are here repeated, and their distinction is attempted by the cubical dimensions of the braincase, which cannot be said either to be satisfactory or in any way final; variation both in the size and shape of the braincase being too great among individuals ever to permit this method to be accepted as conclusive.

1898. *Selenka, Studien uber Entwickelungsgeschichte der Tier, Siebentes Heft, Menschenaffen.*

In this paper comparison is made of the capacity of the braincase, and the shape and size of the teeth of the Ourang, Gorilla, and Chimpanzee. No species or races in either of the genera are predicated upon the differences observable.

1904. *W. Rothschild, in Proceedings of the Zoological Society of London.*

In this paper, after some remarks upon the contributions of Messrs. Matschie and Selenka to our knowledge of the Great Apes, the Author presents his view regarding the specific status of Ourangs. While considering the presence or absence of the cheek callosities to be dimorphic, and not indicating a distinct form, he, nevertheless, confers names upon these accidents of nature, and thus creates them subspecies, a conclusion not likely to be seriously entertained or adopted. One species is recognized, PONGO PYGMÆUS Hoppius, erroneously attributed to Linnæus, and eight 'dimorphic' subspecies, according to the presence or absence of cheek callosities as follows:

Pongo pygmæus.	*With cheek callosities.*	*Without cheek callosities.*
Pongo pygmæus *pygmæus*	*agrias* nomen nudum	*pygmæus.*
Pongo pygmæus *wurmbi*	*wurmbi*	*skalauensis.*
Pongo pygmæus *dadappensis*	*dadappensis*	*genepaiensis.*
Pongo pygmæus *bicolor*	*abelii*	*bicolor.*

It will thus be seen that all of Selenka's races are received, but with only one peculiarity, and that 'dimorphic,' (it cannot be considered a character), attributed to them.

As it has not been proven that cheek callosities are 'dimorphic,' or any evidence whatever produced to sustain his position, the Author of the paper being the only one to express this view of the case, and all the indications we possess, obtained from the study of skins and skulls, seeming to show that these growths are not 'dimorphic' but purely an individual peculiarity, as they attain any size only on some old males, and are not in evidence in the young or half grown individuals, and no skull at any age indicates that these abnormities have ever existed, therefore it cannot be said that, with only our present knowledge to guide us, the Author's view of this question should be accepted.

PONGO *PYGMÆUS (Hoppius).

Bornean Ourang.

Simia pygmæus Hoppius, Amœnit. Acad., 1763, p. 68. (Undoubtedly bestowed on an Ourang).

Simia satyrus Linn., Syst. Nat., I, 1766, p. 34, (nec 1758, p. 25); Bodd., Elench. Anim., 1784, p. 55; Shaw, Gen. Zool., I, 1800, p. 3; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 22, 7me Leçon; Less., Spec. Mamm., 1840, p. 44; Blainv., Ostéog., 1841, Atl., pl. I; Gray, Voy. Samarang, Vert., 1843-46, p. 1; (nec Synon.), pl. I, Old Male; I. Geoff., Cat. Primates, 1851,

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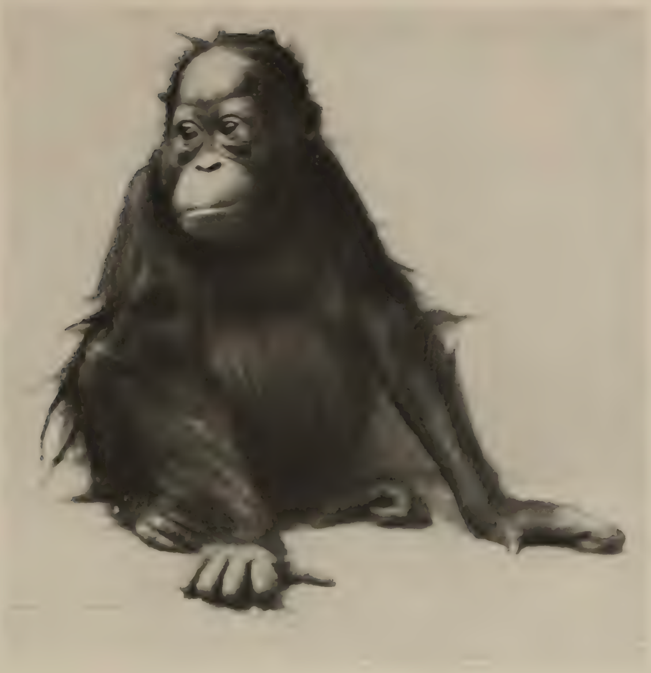
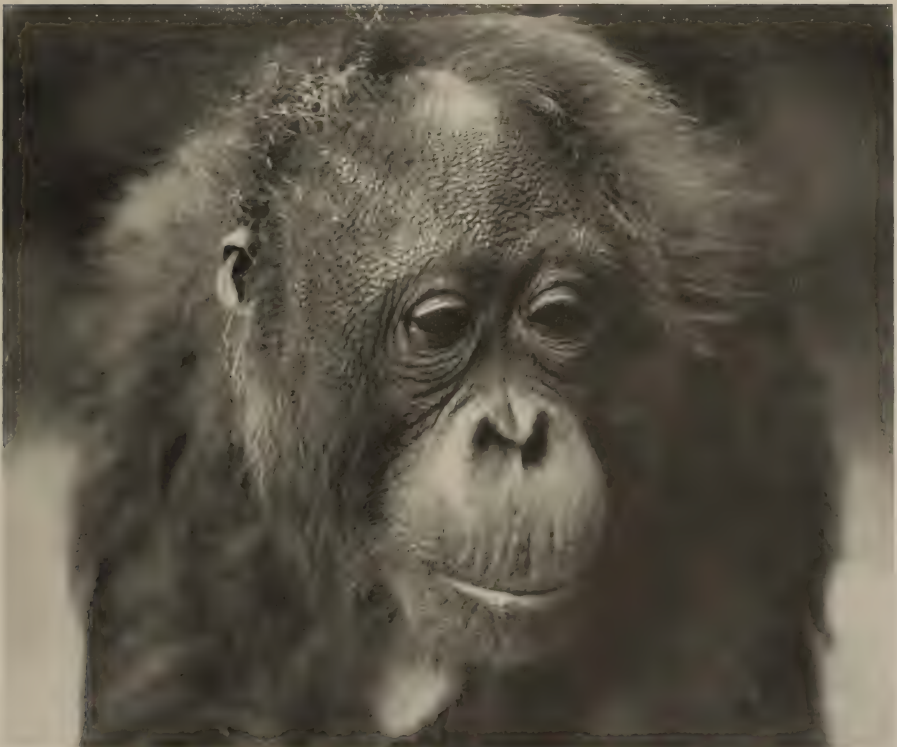
*If the Bornean and Sumatran Ourangs are specifically the same, as at present seems the fact, then PYGMÆUS is the proper name for these Apes; but if they are distinct the Bornean Ourang should be called "WURMBI," the Sumatran "ABELII."



Pongo pygmæus.



Pongo pygmæus.

p. 6; Dahlb., Stud. Zool. Fam. Reg. Anim Nat., fasc. I, 1856, p. 59; Reichenb., Vollständ. Naturg. Affen, 1862, p. 176, figs. 450-462.

Ourang-outan v. Wurmb, Verhandl. Batav. Genootsch., Deel. 20, pl. 245.

Pongo wurmbi Tied., Zool., 1808, p. 329; Owen, Proc. Zool. Soc. Lond., 1835, p. 355.

Pithecus satyrus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 89; Owen, Trans. Zool. Soc. Lond., IV, 1851, p. 82.

Simia morio Owen, Proc. Zool. Soc. Lond., 1836, p. 92, ♀; Bedd., Trans. Zool. Soc. Lond., XIII, 1892, p. 201.

Pithecus wallacei Blainv., Ostéog., 1839, p. 46.

Pithecus brookei Blyth, Journ. Asiat. Soc. Beng., XXII, 1853, p. 375.

Pithecus owenii Blyth, Journ. Asiat. Soc. Beng., XXII, 1853, p. 375.

Pithecus curtus Blyth, Journ. Asiat. Soc. Beng., XXIV, 1855, p. 527.

Pithecus morio Owen, Trans. Zool. Soc. Lond., 1836, p. 165.

Pithecus satyrus ladakensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 134.

Pithecus satyrus batangtuensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 384.

Pithecus satyrus dadappensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 384.

Pithecus satyrus genepaiensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 385.

Pithecus satyrus skalauensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 385.

Pithecus satyrus tuakensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 385.

Pithecus satyrus rantaiensis Selenka, Sitzungsb. Königl. Akad. Wiss., Berlin, XVI, 1896, p. 385.

Simia satyrus ladakensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 13, figs. 15-17.

Simia satyra wallacei Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 14.

Simia satyra batangtuensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 11, figs. 11, 12.

Simia satyra dadappensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 8, figs. 3, 4.

Simia satyra genepaiensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 12, figs. 13, 14.

Simia satyra skalauensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 9, figs, 5, 6.

Simia satyra tuakensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 11.

Simia satyra rantaiensis Selenka, Menschenaffen Stud. über Entwick- und Schadelb. Ourang-utan, Erste Lief., 1898, pp. 7, 10, figs. 7, 10.

Pongo pygmæus Rothsch., Proc. Zool. Soc. Lond., 1904, p. 438, fig. 117.

Pongo pygmæus agrias Rothsch., Proc. Zool. Soc. Lond., 1904, p. 438, fig. 116.

Pongo pygmæus wurmbi Rothsch., Proc. Zool. Soc. Lond., 1904, p. 438.

Pongo pygmæus skalauensis Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 436, 438.

Pongo pygmæus dadappensis Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 436, 438.

Pongo pygmæus genepainensis Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 436, 438.

Pongo pygmæus pygmæus Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 144.

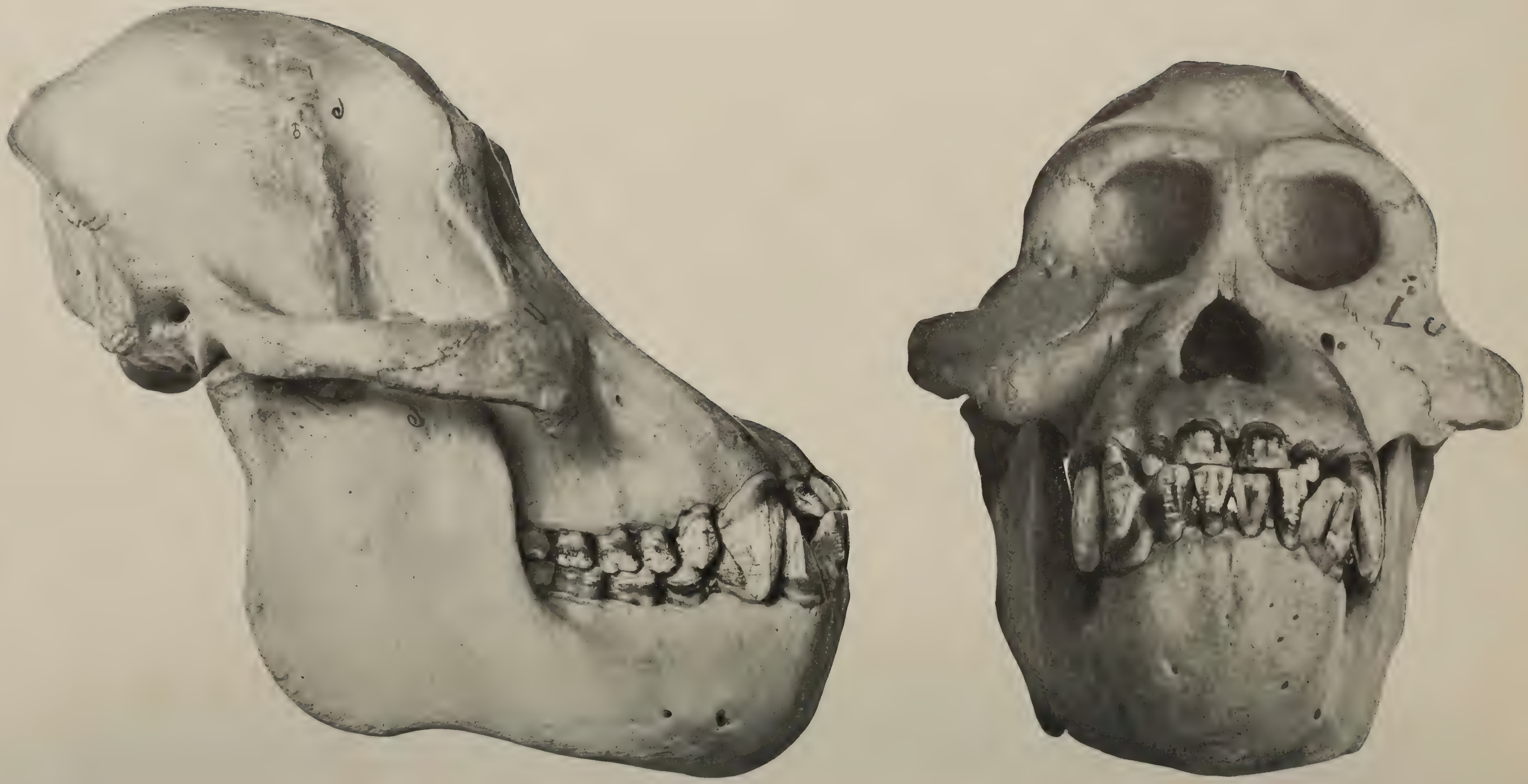
Type locality. Unknown.

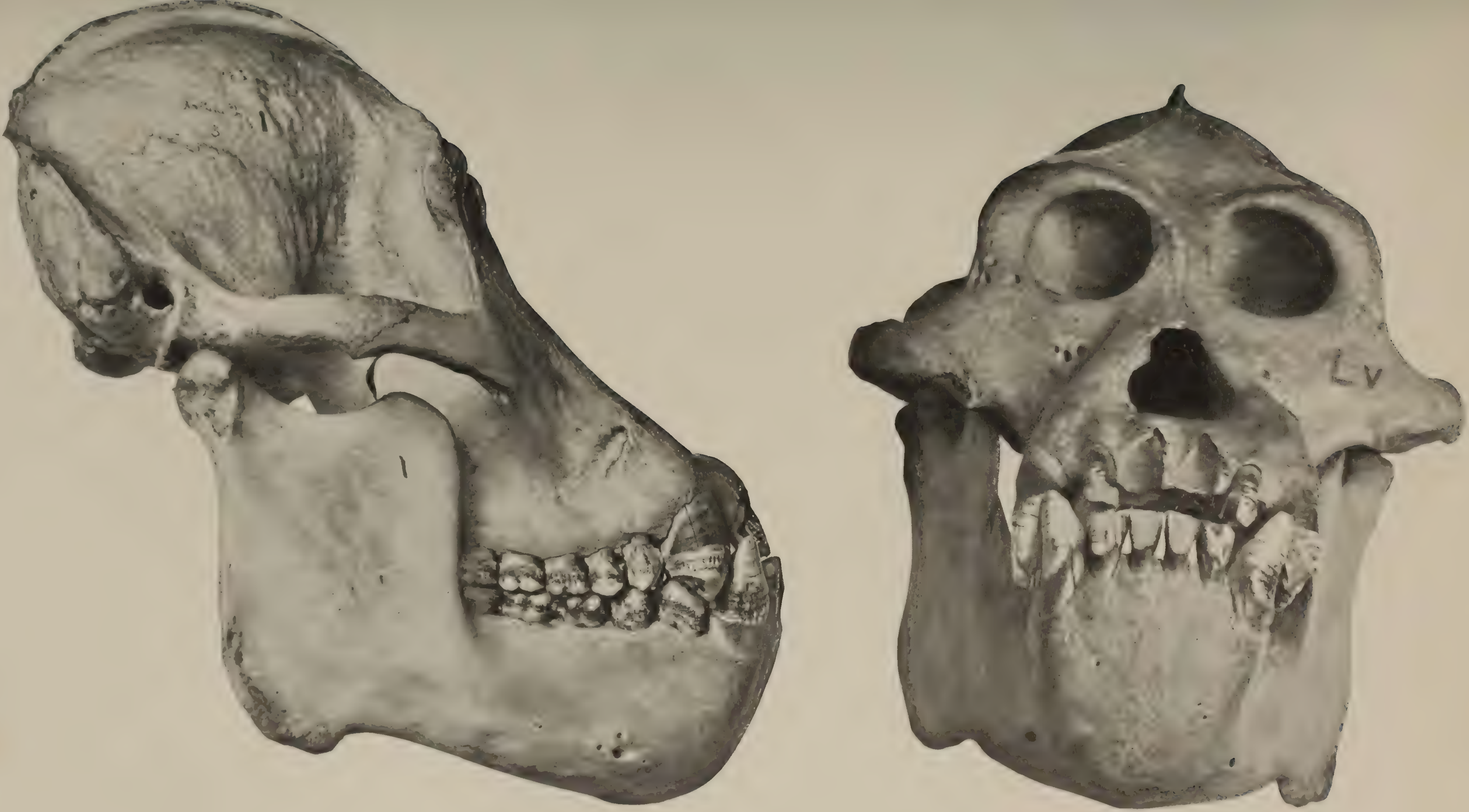
As Hoppius undoubtedly gave the name PYGMÆUS to an Ourang, it stands if only one species is recognized, but if more than one is accepted, Bornean and Sumatran, then Hoppius' name falls as undeterminable and *wurmbi* takes its place.

Sumatran Ourang.

Simia abelii Clarke, Asiat. Res., XVI, 1826, p. 489, pls. 1, 3, 4, 5; Fisch., Syn. Mamm., 1829, p. 10; Blyth, Journ. Asiat. Soc. Beng., XXII, 1853, p. 370; Reichenb., Vollständ. Naturg. Affen, 1862, p. 198, fig. 463, t. 38, fig. 496 head and foot.

PLATE XXIII.





Pongo pygmæus ex Landak-Sarawak District, Borneo.

Upper Head No. L.6. Munich Mus. Coll. ½ Nat. Size.
Lower Head No. L.1. Munich Mus. Coll. ½ Nat. Size.

Simia bicolor I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, 1841, p. 526; *Id.* Cat. Primates, 1851, p. 6; Reichenb., Vollständ. Naturg. Affen, 1862, p. 182, figs. 455-457, t. 33, fig. 497.

Simia satyrus (nec Linn.), Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 8.

Pithecus sumatranus deliensis Selenka, Sitzungsb. Akad. Wiss., Berlin, XVI, 1896, p. 386.

Pithecus sumatranus obogensis Selenka, Sitzungsb. Akad. Wiss., Berlin, XVI, 1896, p. 386.

Pongo pygmæus bicolor Rothsch., Proc. Zool. Soc. Lond., II, 1904, pp. 437, 439.

Pongo pygmæus abelii Rothsch., Proc. Zool. Soc. Lond., II, 1904, pp. 437, 439.

Type locality. Ramboom, near Touraman. N. W. coast of Sumatra.

Geogr. Distr. Borneo and Sumatra.

Genl. Char. Hair dark mahogany to fox red, and frequently with patches of ochraceous.

The above is the synonymy, or the essential citations of the Bornean and Sumatran Ourang-utans, and while of the opinion that there is only one species of this great Ape, I have not been able to compare sufficient material from the two islands to enable me to give a decided opinion as to their identity. I can only state that I have been unable to discover any character that would indicate they were distinct. The crania of the Sumatran Ourang that I have seen, present the same great individual variations that are so conspicuous in the Bornean examples, and afford no character upon which to base a specific difference from the Bornean Ourang or from among themselves, and the color of the pelage exhibits much variation among specimens. I have kept the synonymy separate in order to show what name each would bear, should ample material, gathered in the future, prove they were entitled to be considered distinct, which cannot be shown at the present time.

The following dimensions are taken from a Landak skull from Upper Merekai River, Landak-Sarawak District, Borneo:

Measurements. Skull adult male, total length, 240; occipito-nasal length, 167; intertemporal width, 59; breadth of braincase, 103; Hensel, 182; zygomatic width, 174; extreme breadth of orbits, 112; width of rostrum at canines, 77; palatal length, 93; length of upper canines, 33.6; length of upper molar series, 57.4; length of mandible, 184;

length of lower molar series, 72. Ex specimen from Landak, Selenka Collection, No. 1, Munich Museum.

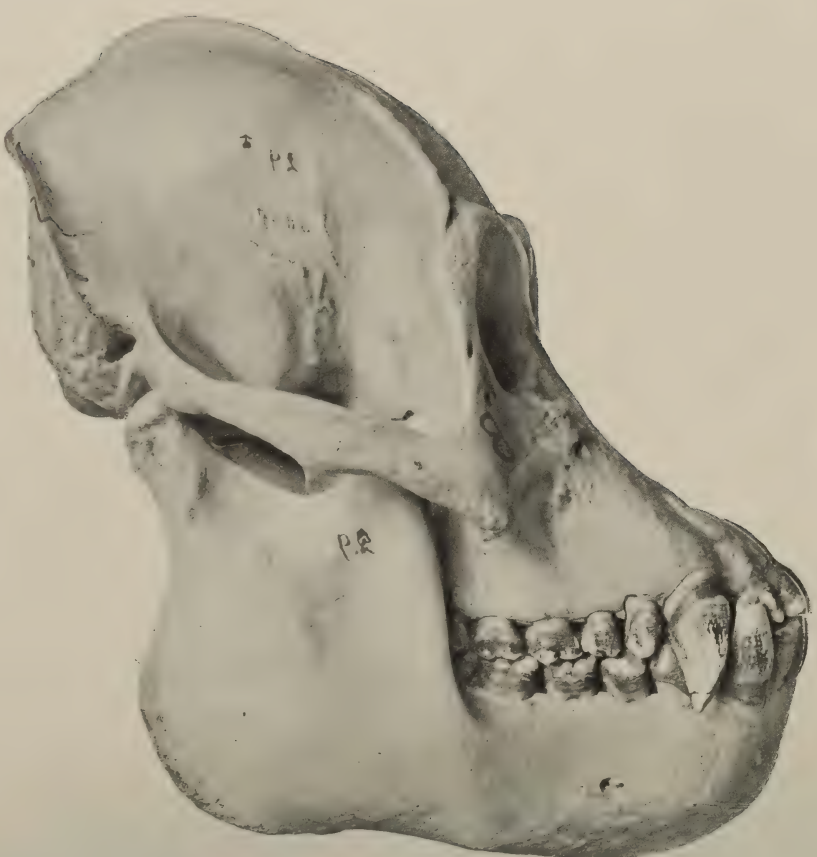
Among the skulls of the Ourang from Landak brought by Mr. Selenka, most of which are those of young animals, are two of old adult males, and these are entirely different in appearance, quite sufficiently so, if they belonged to a genus not known to vary so widely in cranial characters, to constitute them distinct species. No. 1, whose measurements are given above is in some degree the smaller of the two, with but a slightly sloping facial region, a braincase considerably elevated above the orbits, and with a low bony crest from the posterior part of the frontal to the occiput. The rostrum is but moderately long, and the orbits are round and not very close together. The face is quite broad for its length, and the ridges, rising from the outer side of the orbits, form an inverted V on the frontal. The other No. 6, is a long, comparatively narrow skull, with a very sloping facial region, and a rather long rostrum. The braincase is rounded, rather broad across the parietals, and less raised above the orbital ridges than that of No. 1, and instead of a crest, the two low ridges, from the outer side of the orbits, run backward on top of the skull, drawing nearer together as they go to the occiput. The orbits are very large, oblong in shape, and quite near together. It will thus be seen how absolutely different these two skulls are, and yet they do not exhibit any greater variation than can easily be found among the crania, not only of all forms of Ourangs, but also of the Chimpanzees and Gorillas.

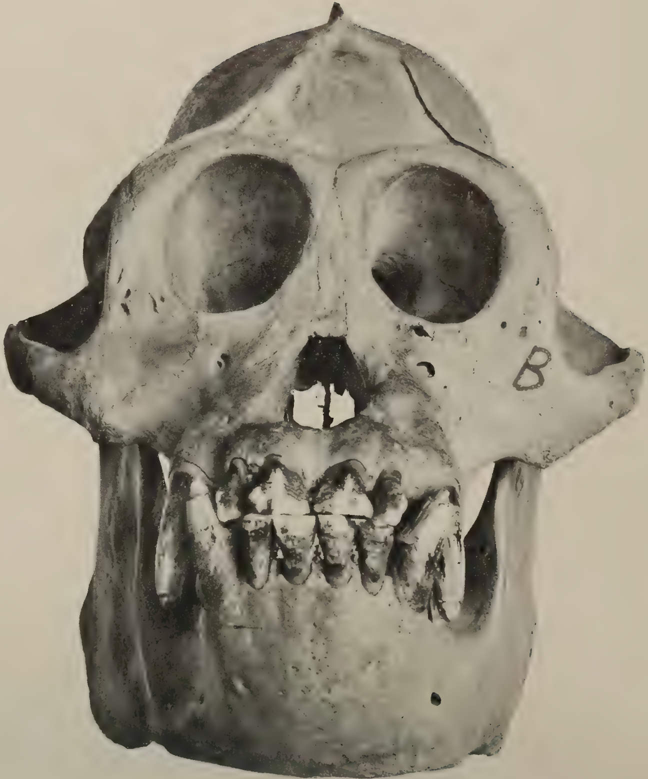
The following dimensions are from a skull of the Batangtu District, Borneo:

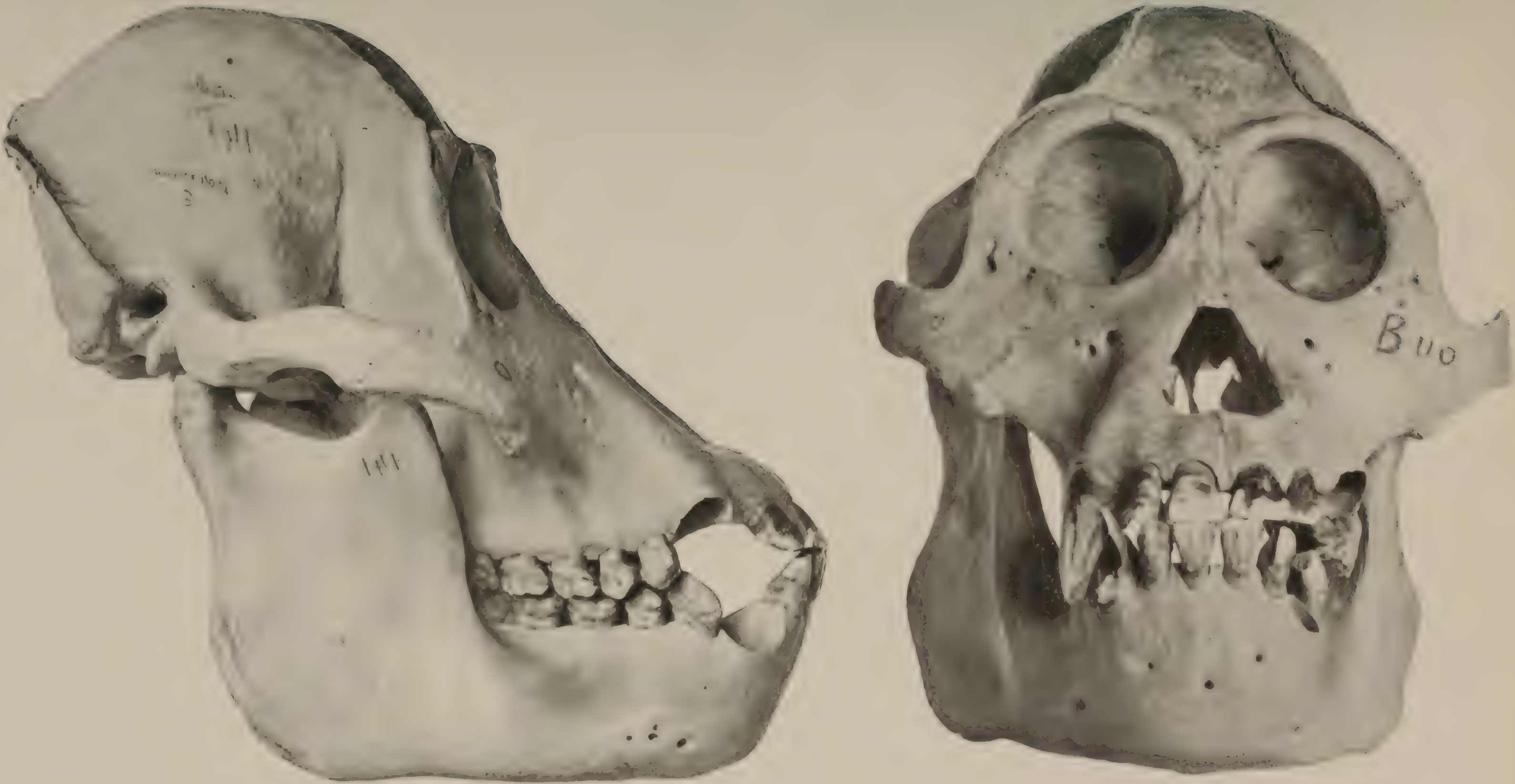
Measurements. Adult Male No. 141, from Batangtu Region, (Selenka Coll.). Total length, 239; occipito-nasal length, 171; intertemporal width, 74; breadth of braincase, 105; Hensel, 172; zygomatic width, 174; extreme width of orbits, 124; width of rostrum at canines, 73; palatal length, 85.2; length of upper canines, 33; length of upper molar series, 61.7; length of mandible, 167; length of lower molar series, 70.2.

This is a large massive skull a little longer than high, with a fairly wide braincase but without much depth. There is no long crest, but two ridges start from the outer side of the orbits and extend backward in parallel lines on top of the skull, turning outward at the interparietal, and join the lateral expansion of the occipital region. The orbits are large, higher than wide, separated by a bony septum 16.9 mm. broad. The rostrum protrudes considerably beyond the line

PLATE XXIV.



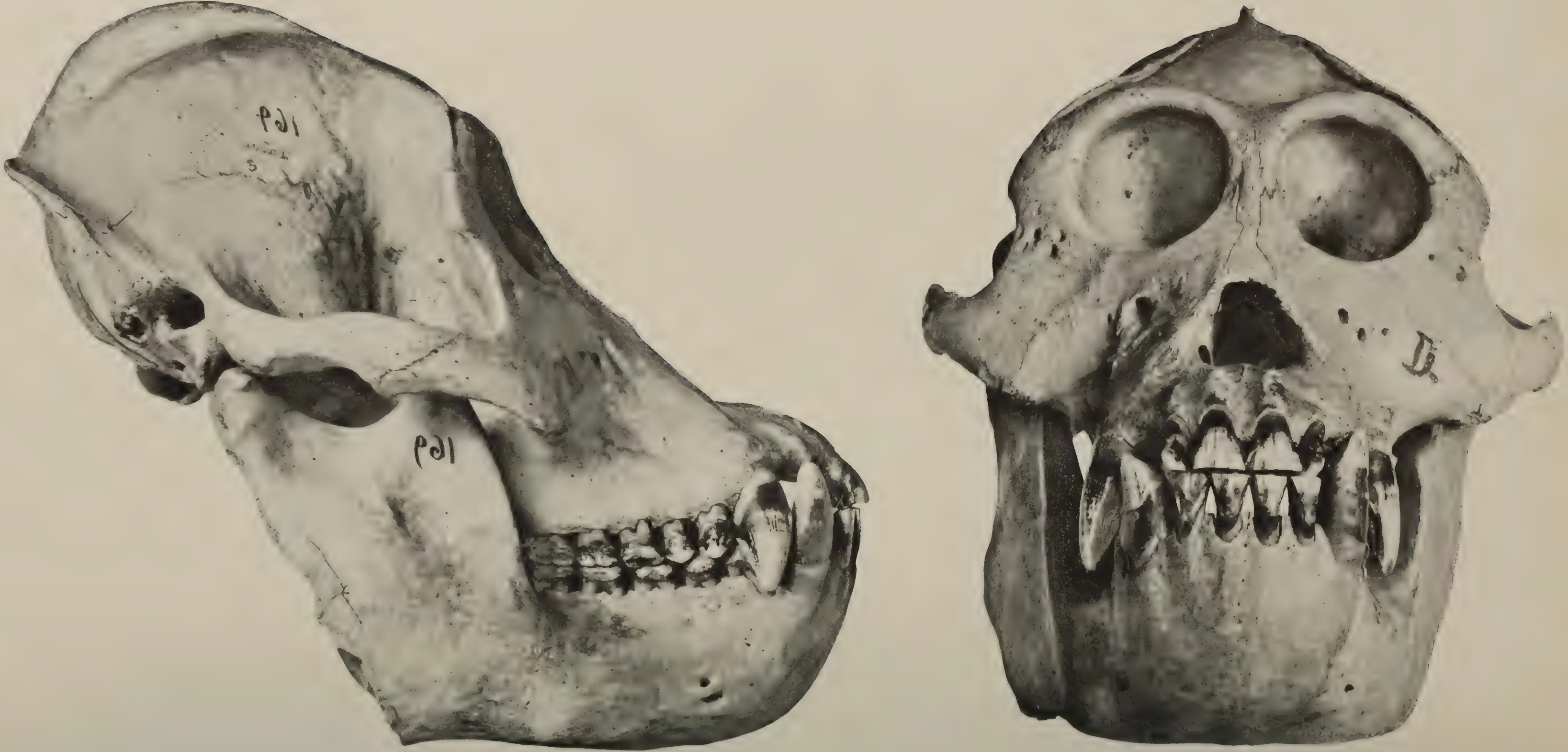


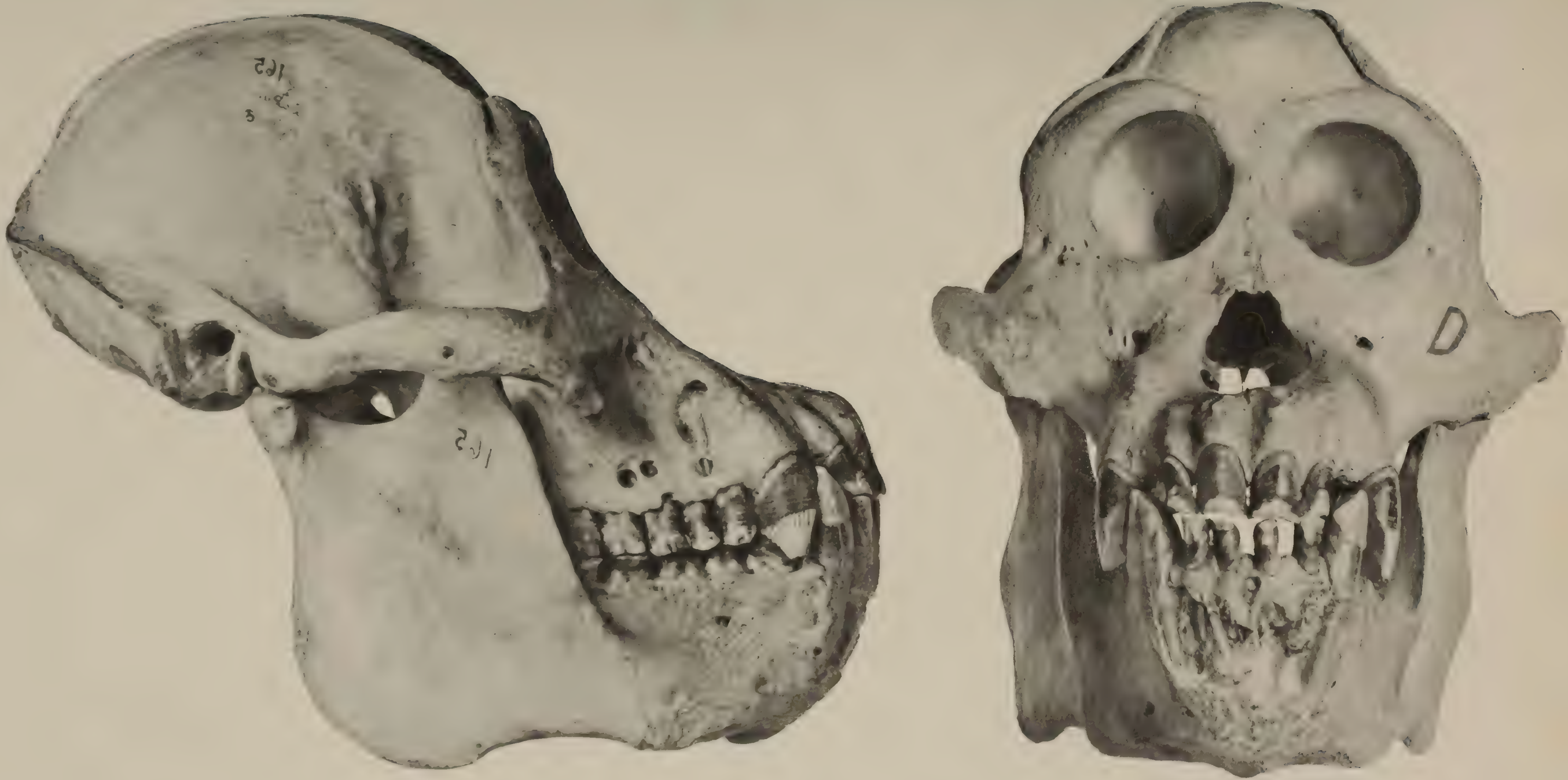


Pongo pygmæus ex Batangtu Region, Borneo.

Upper Head No. B 29 Munich Coll. ½ Nat. Size.
Lower Head No. B 141 Munich Coll. ½ Nat. Size.

PLATE XXV.





Pongo pygmæus ex Dadap district, Borneo.

Upper Head No. D 169 Munich Mus. Coll. ½ Nat. Size.
Lower Head No. D 165 Munich Mus. Coll. ½ Nat. Size.

of the face, and broadens greatly at the canines. The molar series are large, the premolars only slightly smaller than the molars. There are three other skulls from Batangtu of old males, all smaller than No. 141, and varying in size, No. 23 being the smallest. All these possess crests, while the shape of the braincase varies in each, and all are different from No. 141. In three there is a considerable slope of the facial region, No. 24 having the least, but No. 23 has the greatest of all. There is much difference in the shape and size of the orbits, No. 41 being decidedly an elliptical oval, two of the others more rounded but varying in degree, the smallest skull, No. 23, having very large orbits higher than wide, being also more of an elliptical oval like those of No. 41. The rostrum of each of these four skulls also shows much variation in both length and width. In fact these crania are more remarkable for the way in which they vary from each other than for any similarity which they exhibit.

The following dimensions are from a skull of the Dadap District:

Measurements. Skull. Total length, 212; occipito-nasal length, 168; intertemporal width, 75; breadth of braincase, 103; Hensel, 174; zygomatic width, 174; extreme breadth of orbits 127; width of rostrum at canines, 73; palatal length, 94.8; length of upper canines, 32.8; length of upper molar series, 55.8; length of mandible, 182; length of lower molar series, 65.3. No. 169 Selenka Collection, Munich Museum.

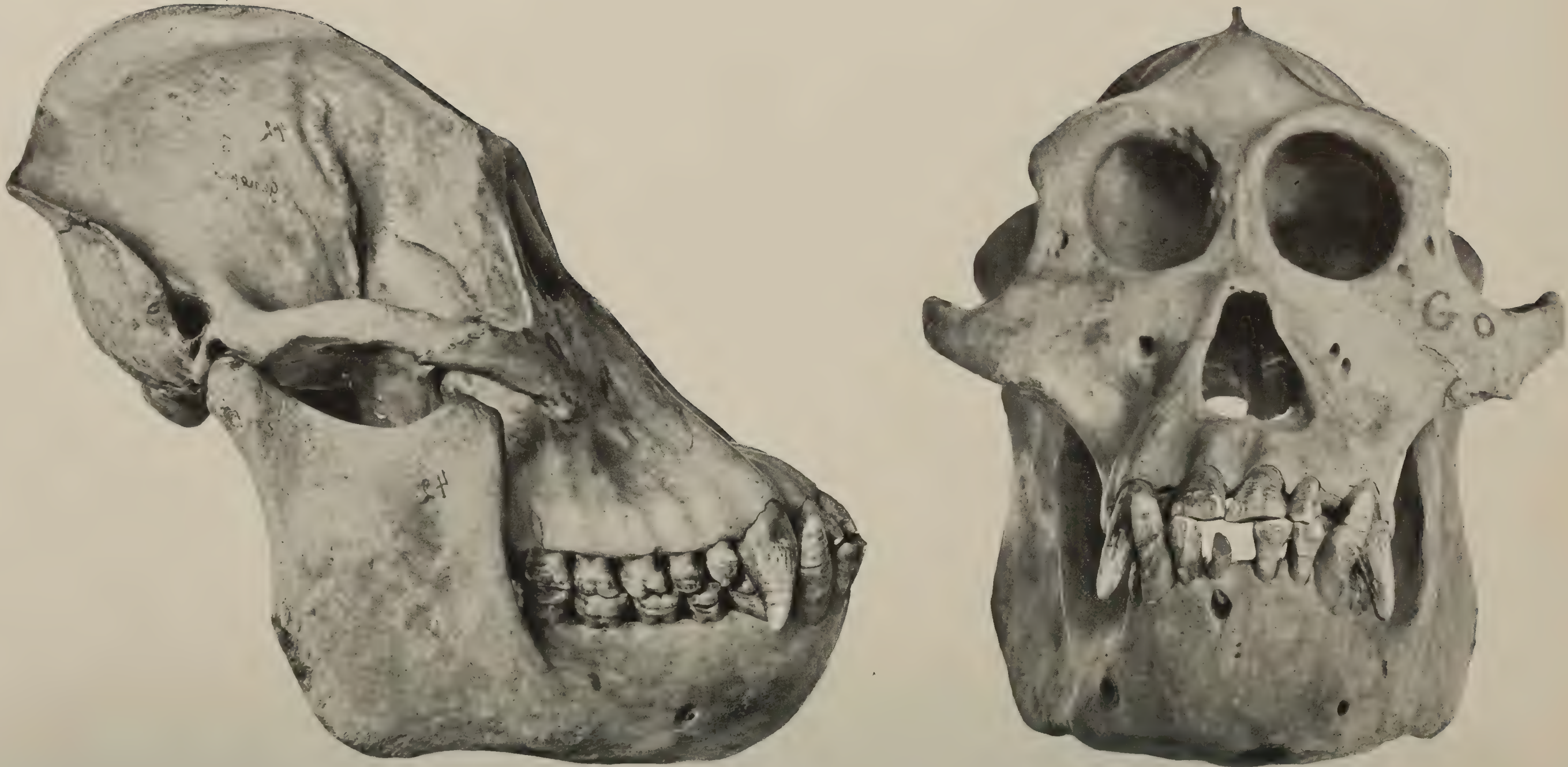
As is the case with all the skulls of the various forms recognized by Selenka in his Collection, the great majority are those of immature animals, even very young individuals, and with a few old females. So it was possible to procure only four old adult males of *dadappensis*, and two of *genepaiensis*. Even with this small number the variations exhibited by these skulls were extraordinary. Two of *dadappensis*, Nos. 169 and 183, are nearest in general appearance, but even they show considerable differences. No. 169 is slightly the larger, with a larger and more rounded braincase, round orbits, instead of oval as in the other, and a longer rostrum. Both have bony crests, that of No. 183 being the longer, but that of 169 the higher. The low ridges from the outside of the orbits recede over the skull very differently, that of 169 not joining the bony crest until beyond the frontal, and enclosing a large part of that bone between them, while on 183 these ridges meet the crest midway of the frontal and enclose a very small portion of that bone. The fourth skull, No. 165, is altogether a different object. It has no bony crest, the braincase rises considerably above the orbital ridges, and is rounded, and the low ridges from the orbits go backwards over the skull, drawing gradually nearer until they come together at the occiput. The facial region is much more horizontal than that of the other two, which, in them, has a considerable slope, and the rostrum is shorter. The orbits are small and oval, but still of a different shape from those of 183. The zygomatic width is less than in the others, although they also differ, and this causes the face to appear much narrower. Altogether No. 165 is so very different both in its general appearance, as well as in particular parts, some of which are mentioned above, that judging by the characters it presents as compared with the other two, it might easily be regarded as a distinct species, and yet all three came from the same district, or the same place.

Turning now to the two old adult male skulls of so-called *genepaiensis,* we are at first impressed by their total dissimilarity. Both are old males, but one, 151, is half as large again as the other, with the braincase lifted high up, and not so much slope to the facial region. It is altogether a more massive and heavier skull, and larger in all its parts. Both have bony crests, but that of 151 is broader and rises higher at the occiput. The superior outline of the braincase is nearly straight, while that of the smaller skull, No. 42, curves downwards at the occiput. In their general aspect these crania resemble those of *P. dadappensis,* varying in different particulars, as all Ourang skulls do from each other, but the two from Genepai differ from each other much more, in many ways, than they do from those from Dadap, and there are no characters exhibited by them which would help to assert a claim for separation, and in view of the proximity of the localities from which they came, and which would seem to negative the existence of distinct species, the proper course appears to be to regard them as the same.

The following dimensions are from a skull of the Skalau District:

Measurements. Skull. Adult Male. No. 200 Selenka Collection, Munich Museum. Total length, 248; occipito-nasal length, 149; intertemporal width, 64; breadth of braincase, 91; Hensel, 163; zygomatic width, 158; extreme width of orbits, 104.1; width of rostrum at canines, 65; palatal length, 83.5; length of upper canines, 28.7; length of upper molar series, 54.9; length of mandible, 158; length of lower molar series, 67.

The skull, the measurement of which is given above, is a fair average size of an old male Ourang. It has a low crest from the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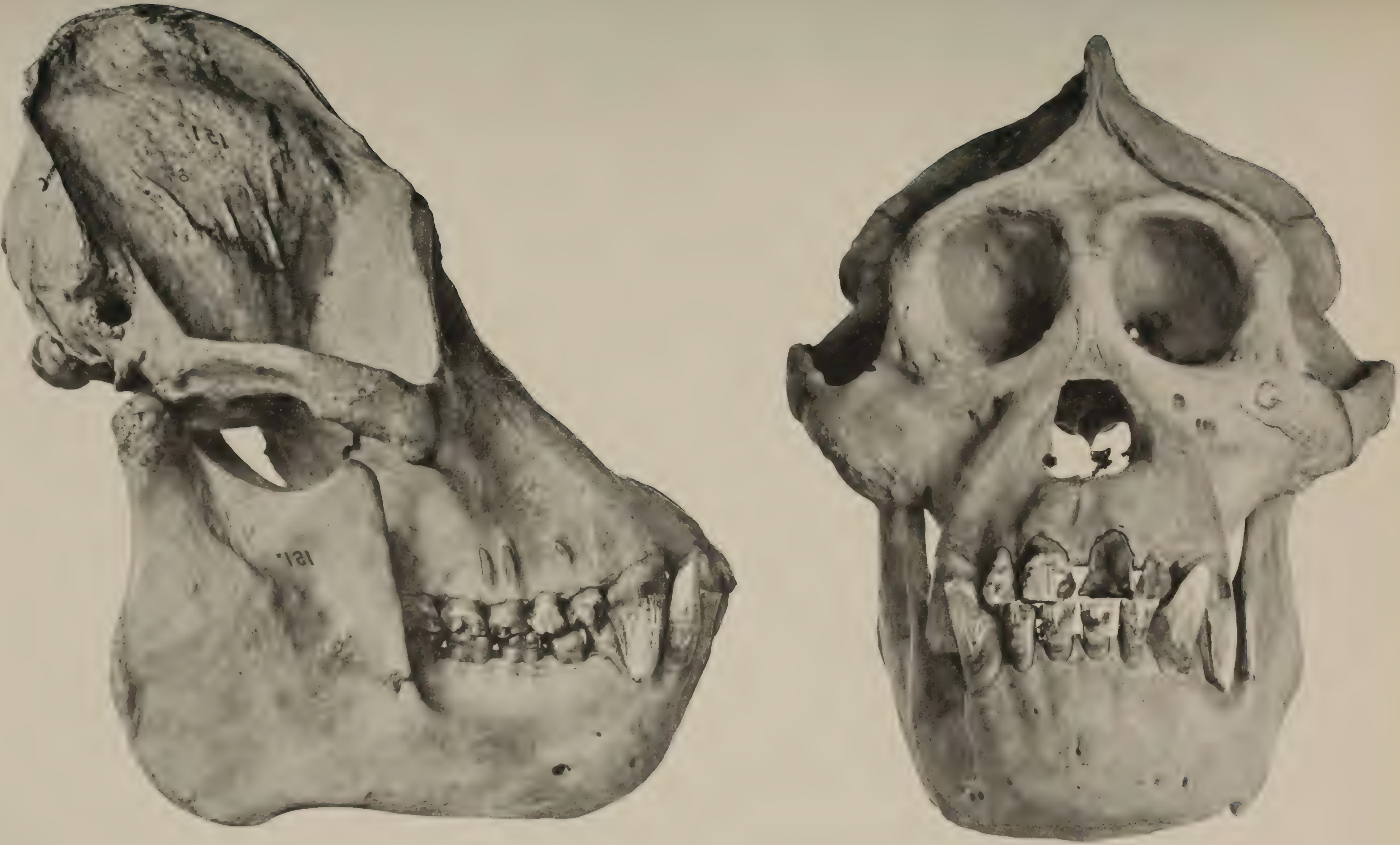
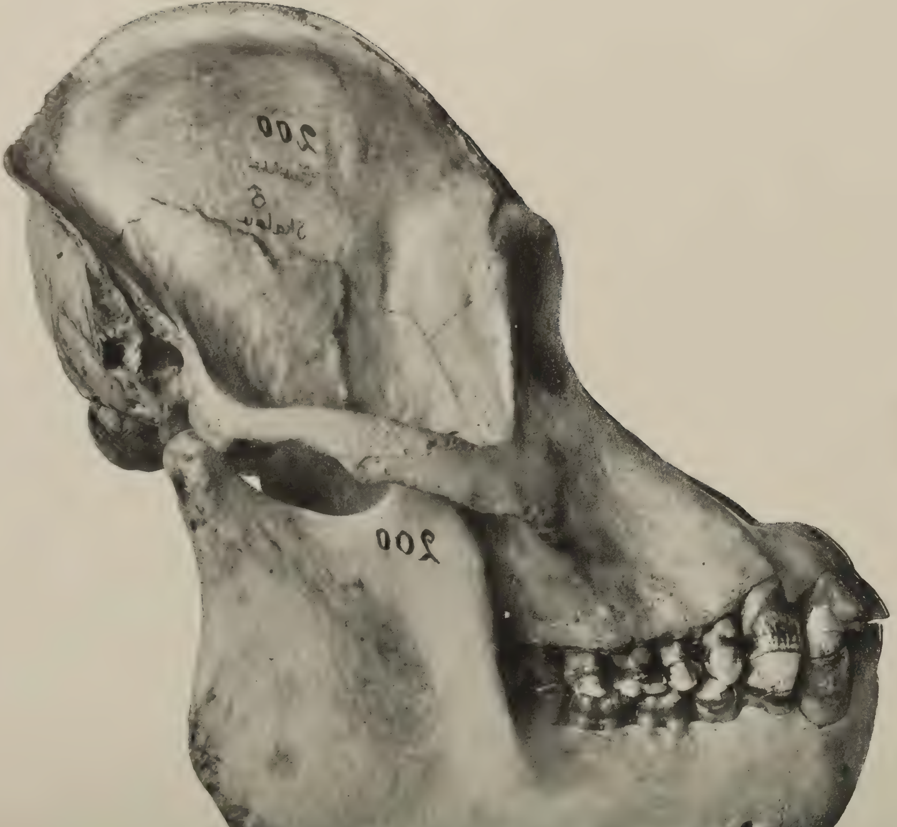


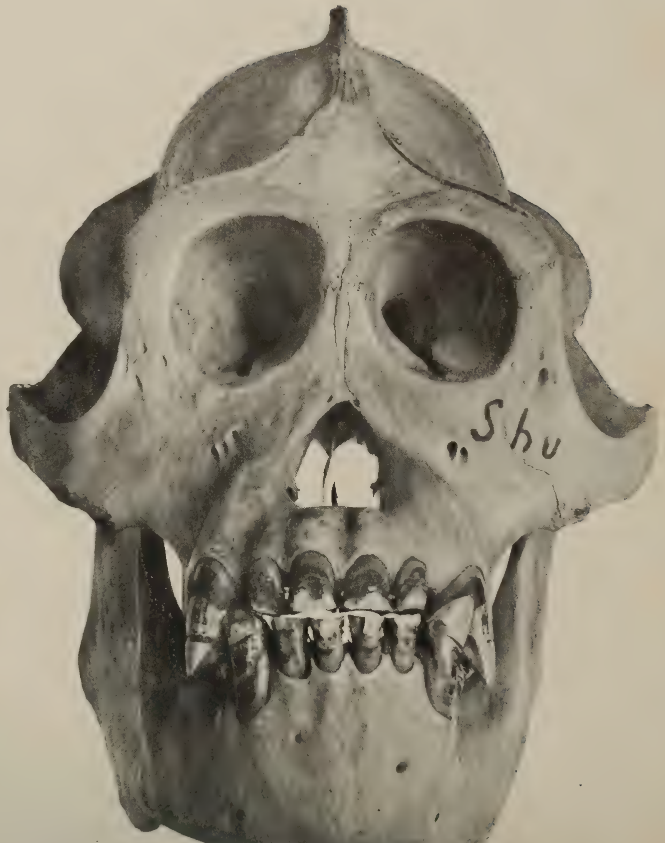
Pongo pygmæus ex Genepai District, Borneo.

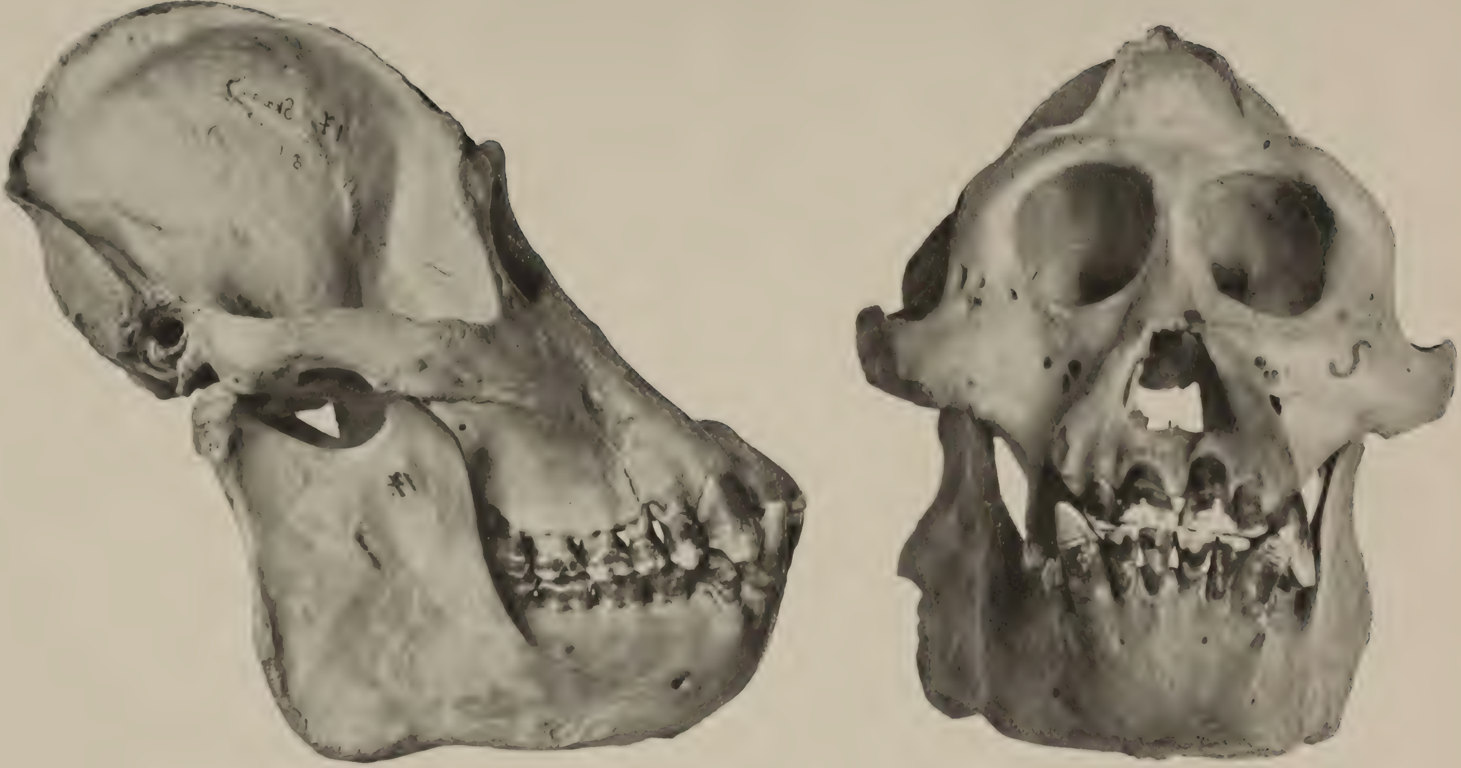
Sides reversed.

Upper Head No. G. 42 Munich Mus. Coll. ½ Nat. Size.
Lower Head No. G. 151 Munich Mus. Coll. ½ Nat. Size.

PLATE XXVII.







Pongo pygmæus ex Skalau District, Borneo.

sides reversed.

Upper Head No. S. 200 Munich Mus. Coll. ½ Nat. Size.
Lower Head No. S. 14 Munich Mus. Coll. ½ Nat. Size.

middle of the forehead to the occiput, meeting the two low ridges from the bony orbits at its anterior end. The plane of the facial region is more upright than those of the *batangtuensis, dadappensis* or *landakensis* styles which have a sloping facial region, and agree in this respect with the *genepaiensis* style of the Selenka Collection.

As is the case with all of the skulls in the Selenka Collection, there are no skins to go with them.

I place as synonyms of this form *Simia satyrus rantiensis* and *S. s. tuakensis* of Selenka. Of the first named only immature individuals were procured, and there is nothing in the few skulls in the Munich Museum to indicate what are the specific characters to warrant a separation from other Ourangs. Moreover the locality assigned to this form, Rantai, is almost in the center of the Skalau District, a most unlikely place to find a species distinct from the so-called *P. p. skalauensis*. In the absence therefore of any proof that the Rantai specimens are distinct, it is better to drop the name from the list of accepted species. As for the form called *tuakuensis,* it is another case of trying to establish a species upon young animals, and here also the locality given was in the Skalau District. Selenka himself seemed in doubt of the validity of this form, and he must have removed all marks to identify his specimens, for there is not a skull in his series in the Munich Museum referred to *tuakuensis,* and the name does not anywhere appear. It is evident, satisfied that the specimen did not represent a distinct race, Selenka had changed the name, and placed the skulls with those of another form, most probably with *skalauensis*.

Wallace has given an interesting account of the Ourang-utan (l. c.) from which the following extract is taken:

"In Borneo it has a wide range, inhabiting many districts on the south-west, south-east, north-east and north-west coasts, but appears to be chiefly confined to the low and swampy forests. It seems at first sight, very inexplicable that the Mias should be quite unknown in the Sarawak Valley, while it is abundant in Sambas on the west, and Sadong on the east. But when we know the habits and mode of life of the animal, we see a sufficient reason for this apparent anomaly in the physical features of the Sarawak district. In the Sadong, where I observed it, the Mias is only found where the country is low, level, and swampy, and at the same time covered with a lofty virgin forest. From these swamps rise many isolated mountains, on some of which the Dyaks have settled and covered with plantations of fruit trees.

These are a great attraction to the Mias, which comes to feed on the unripe fruits, but always retires to the swamp at night. Where the country becomes slightly elevated, and the soil dry, the Mias is no longer to be found. For example in all the lower part of the Sadong Valley it abounds, but as we ascend above the limits of the tides, where the country though still flat, is high enough to be dry, it disappears. Now the Sarawak Valley has this peculiarity—the lower portion though swampy, is not covered with continuous lofty forest, but is principally covered by the Nipa palm; and near the town of Sarawak, where the country becomes dry, it is greatly undulated in many parts, and covered with small patches of virgin forest and much second growth jungle on ground which has once been cultivated by the Malays or Dyaks. Now it seems to me probable that a wide extent of unbroken and equally lofty virgin forest is necessary to the comfortable existence of these animals. Such forests form their open country, where they can roam in every direction with as much facility as the Indian on the prairie, or the Arab on the desert; passing from tree-top to tree-top, without ever being obliged to descend upon the earth. The elevated and drier districts are more frequented by man, more cut up by clearings and low second growth jungle not adapted to its peculiar mode of progression, and where it would therefore be more exposed to danger, and more frequently obliged to descend upon the earth. There is probably a greater variety of fruit in the Mias district, the small mountains which rise like islands out of it serving as sort of gardens or plantations, where the trees of the uplands are to be found in the very midst of the swampy plains.

"It is a singular and very interesting sight to watch a Mias making his way leisurely through the forest. He walks deliberately along some of the larger branches in the semi-erect attitude which the great length of his arms and the shortness of his legs cause him naturally to assume, and the disproportion between these limbs is increased by his walking on his knuckles, not on the palm of the hand as we should do. He seems always to choose those branches which intermingle with an adjoining tree, on approaching which he stretches out his long arms, and seizing the opposing boughs, grasps them together with both hands, seems to try their strength, and then deliberately swings himself across to the next branch, on which he walks along as before. He never jumps nor springs or even appears to hurry himself, and yet manages to get along almost as quickly as a person can run through the forest beneath. The long and powerful arms are of the greatest use to the animal enabling it to climb easily the loftiest trees, to seize fruits and young leaves from slender boughs which will not bear its weight, and to gather leaves and branches with which to form its nest. I have already described how it forms a nest when wounded, but it uses a similar one to sleep on almost every night. This is placed low down, however, on a small tree not more than twenty to fifty feet from the ground, probably because it is warmer, and less exposed to wind than higher up. Each Mias is said to make a fresh one for himself every night; but I should think that is hardly probable, or their remains would be much more abundant; for though I saw several about the coal mines, there must have been many Ourangs about every day, and in a year their deserted nests would become very numerous. The Dyaks say that when it is very wet the Mias covers himself over with leaves of pandanus or large ferns, which has perhaps led to the story of his making a hut in the trees.

"The Ourang does not leave his bed till the sun has well risen, and has dried up the dew upon the leaves. He feeds all through the middle of the day, but seldom returns to the same tree two days running. They do not seem much alarmed at man, as they often stared down upon me for several minutes, and then only moved away slowly to an adjacent tree. After seeing one, I have often had to go half a mile or more to fetch my gun and in nearly every case have found it on the same tree, or within a hundred yards when I returned. I never saw two full grown animals together, but both males and females are sometimes accompanied by half grown young ones, while at other times, three or four young ones were seen in company. Their food consists almost exclusively of fruits, with occasionally leaves, buds, and young shoots. They seem to prefer unripe fruits, some of which were very sour, others intensely bitter, particularly the large red, fleshy arillus of one which seemed an especial favorite. In other cases they eat only the small seed of a large fruit, and they almost always waste and destroy more than they eat, so that there is a continual rain of rejected portions below the tree they are feeding on. The Durian is an especial favorite, and quantities of this delicious fruit are destroyed wherever it grows surrounded by forest, but they will not cross clearings to get at them. It seems wonderful how the animal can tear open this fruit, the outer covering of which is so thick and tough, and closely covered with strong conical spines. It probably bites off a few of these first, and then, making a small hole, tears open the fruits with its powerful fingers.

"The Mias rarely descends to the ground, except when, pressed by hunger, it seeks for succulent shoots by the river side; or, in very dry weather, has to search after water, of which it generally finds sufficient in the hollows of leaves. Once only I saw two half grown Ourangs on the ground in a dry hollow at the foot of the Simunjon hill. They were playing together standing erect, and grasping each other by the arms. It may safely be stated, however, that the Ourang never walks erect, unless when using its hands to support itself by branches overhead or when attacked. Representations of its walking with a stick are entirely imaginary.

"The Dyaks all declare that the Mias is never attacked by any animal in the forest, with two rare exceptions; and the accounts I received of them are so curious that I give them nearly in the words of my informants, old Dyak chiefs, who had lived all their lives in the places where the animal is most abundant. The first of whom I enquired said, 'No animal is strong enough to hurt the Mias; and the only creature he ever fights with is the crocodile. When there is no fruit in the jungle, he goes to seek food on the banks of the river, where there are plenty of young shoots that he likes, and fruits that grow close to the water. Then the crocodile sometimes tries to seize him, but the Mias gets upon him and beats him with his hands and feet, and tears him and kills him.' He added that he had once seen such a fight, and that he believes that the Mias is always the victor.

"My next informant was the Orang Kayas, or chief of the Balow Dyaks on the Semunjon River. He said, 'the Mias has no enemies; no animals dare attack it but the crocodile and the python. He always kills the crocodile by main strength, standing upon it, pulling open its jaws and ripping up its throat. If a python attacks a Mias, he seizes it with his hands, and then bites it, and soon kills it. The Mias is very strong; there is no animal in the jungle so strong as he.' "

In regard to the size of the adult Ourang, Mr. Wallace sums up the evidence gained from his own experience and the published accounts of others as follows: "I have myself examined the bodies of seventeen freshly killed Orangs, all of which were carefully measured, and of seven of them I preserved the skeleton. Of this extensive series, sixteen were fully adult, nine being males and seven females. The adult males of the large Orangs only varied from 4 feet 1 inch to

4 feet 2 inches in height, measured fairly to the heel, so as to give the height of the animal if it stood perfectly erect; the extent of the outstretched arms from 7 feet 2 inches to 7 feet 8 inches; and the width of the face from 10 inches to 13½ inches. * * * On the whole, therefore, I think it will be allowed that up to this time we have not the least reliable evidence of the existence of Orangs in Borneo more than four feet two inches high."

Pongo abelii was described by Dr. Clarke (l. c.) as an Ourang-utan of remarkable height from the Island of Sumatra. It was stated to be from 7 to 8 feet high, which, if the measurements were correct, makes it the tallest Ourang of which we have any record. But measurements, unless made by an expert, are apt to go astray, and during the nearly one hundred years since this animal was captured, a very considerable number of these Apes have been procured in Sumatra, and none have fairly approximated the dimensions of Clarke's Ourang; and we are led to suspect either the measurements given were incorrect, from the skin having become stretched, or the tape had been wrongly applied, and that the animal was merely an extra large individual of the ordinary Ourang, for there is nothing in the description, save size, to indicate that it was a different species. And if there was a race of gigantic Ourangs in north west Sumatra, it would be strange that during the last century another example had not been obtained. Until we have more knowledge of a huge Sumatran Ourang, it will be wiser to regard *P. abelii* as the same as the others procured in the island.

"Head and body 7 feet 6½ inches; mandible 4 inches; ascending ramus above teeth, 2½ inches, depth at symphysis 2½ inches."

Measurements. Skull: Adult Male. Total length, 227; occipitonasal length, 165; intertemporal width, 68; breadth of braincase, 95; Hensel, 163; zygomatic width, 184; extreme breadth of bony orbits, 114; width of rostrum at canines, 72; palatal length, 86; length of upper molar series, 58; length of mandible, 165; length of lower molar series, 63.1. Ex type *P. s. deliensis* Selenka, Munich Museum, No. 10.

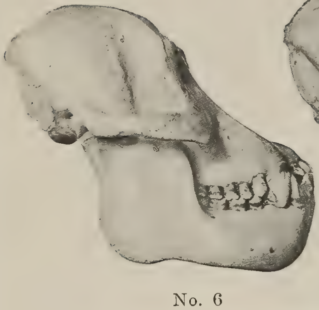
The above is an upright skull with a much less lateral depth, 203 to 239. The braincase is fairly large, rounded on top with a low bony crest rising from the posterior part of the frontal, and going to the occiput where it joins the lateral expansion of the occipital region. The facial region is horizontal and the rostrum broad and short, standing at a right angle to the face. Orbits large and close together and the cheek bones are broad. Another skull of an adult male also marked "type" is quite different in shape. The facial region is very sloping from the upper edge of the orbital ridge to the root of the canines; the rostrum is much longer, and the canine sockets lie at a very different angle from those of the type; the braincase is narrower and higher posteriorly, and the occipital region is both broader and higher. The two skulls are quite unlike, and serve to show of how little value for specific distinctions are the cranial characters of these Apes.

The type of *deliensis* Selenka in the Munich Museum collected by Dr. Martin, came from Kampong Stabat village on the north bank of the Wampoo River in Langkat District, north east Sumatra. Two specimens marked types.

The type of *S. bicolor* in the Paris Museum is barely half grown. The face and under parts are very light while the upper parts of the body and limbs are chestnut with light areas, such as those about the shoulders, of a yellowish red. Four adult males in the United States National Museum from Aru Bay, east Sumatra, vary considerably among themselves. The general color is a rich dark mahogany, some with the limbs and whiskers almost ochraceous and this color is distributed without any regard to similarity or regularity. A large series of females and young also exhibit the same individual variation in coloration. These all probably are the same as *P. s. bicolor* the type of which described above, has doubtless greatly faded.

Measurements. Skull: total length, 224.1; occipito-nasal length, 165; Hensel, 169; intertemporal width, 64; zygomatic width, 162; palatal length, 92.3; length of upper molar series, 62.6; length of mandible, 191; length of lower molar series, 71.6.

Aru Bay is close to Deli, and therefore these specimens must be the same as *P. s. deliensis* of Selenka, though the above measurements show a very differently proportioned skull from the type of *deliensis* given above. But there is no especial significance in this, for individual variation in the skulls of Ourangs is carried to so excessive a degree, that a divergence from the typical form may be expected as a matter of course. The surprise, if any existed, would arise if two crania were found to resemble each other. *P. s. obongensis* Selenka came from the vicinity of Mount Abongabong, northerly from Langkat, northeast Sumatra. This is the same locality from which *deliensis* came and therefore these two, and the Aru Bay examples are doubtless all the same species.



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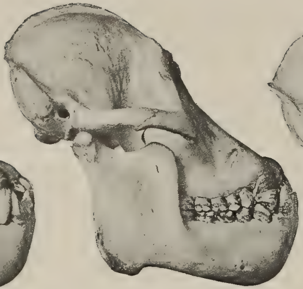
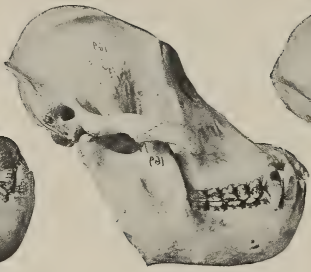


No. 1

Landak-Sarawak District.



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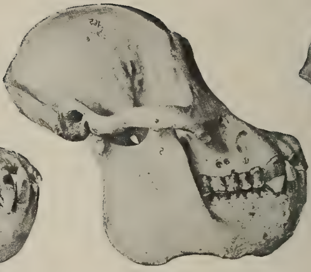
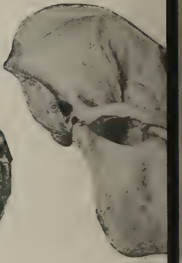


No. 165

Dadap District.



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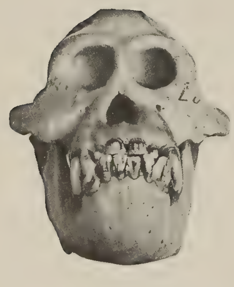

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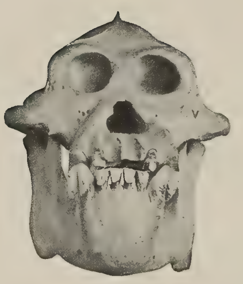
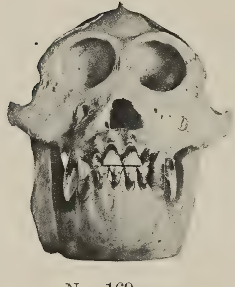


No. 1

Landak-Sarawak District.



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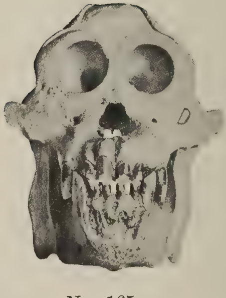

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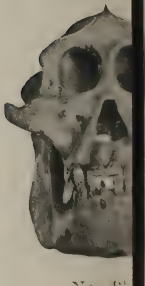
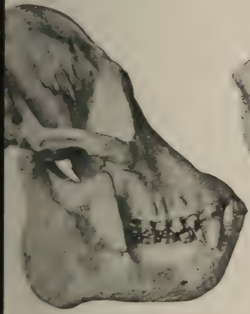
Dadap District.



No. 4

PONG

PLATE XXVIII.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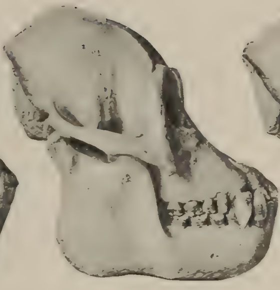
District.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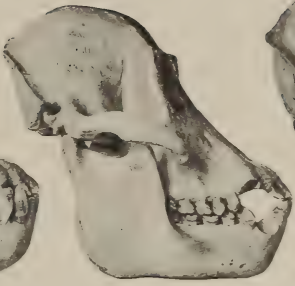
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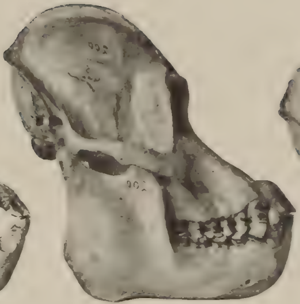
Batangtu District.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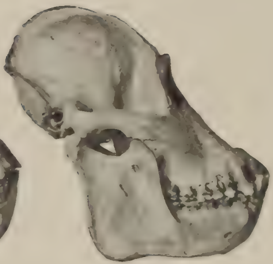
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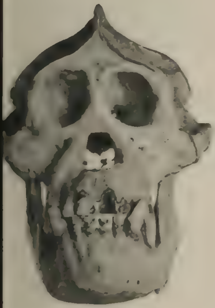
Skalau District.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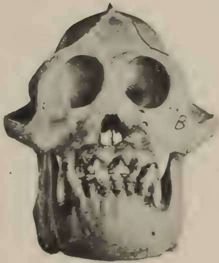
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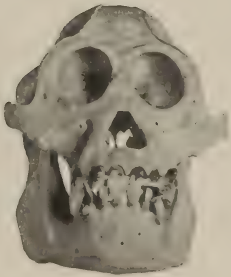
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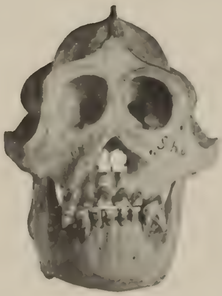
Batangtu District.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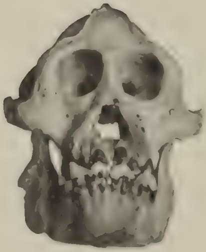
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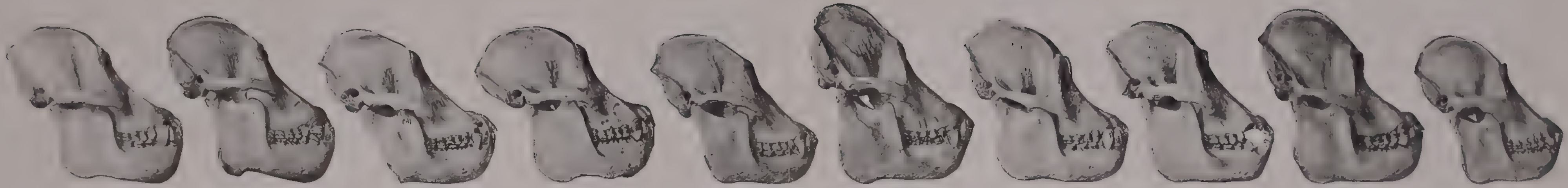
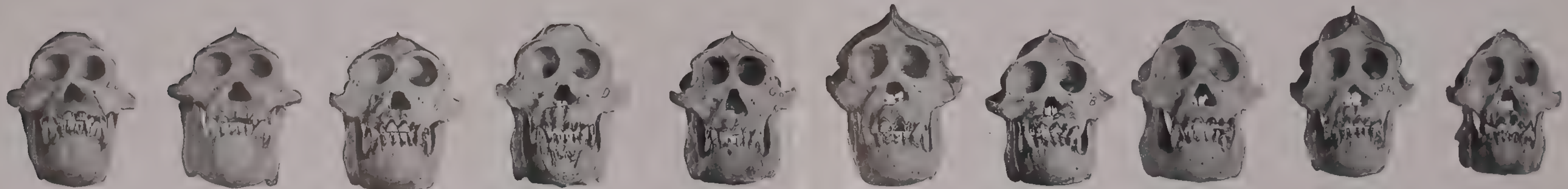
Skalau District.

RNEO



No. 6 No. 1
Landak-Sarawak District.
No. 169 No. 165
Dadap District.
No. 42 No. 151
Genepai District.
No. 129 No. 141
Batangtu District.
No. 200 No. 17
Skalau District.



No. 6 No. 1
Landak-Sarawak District.
No. 169 No. 165
Dadap District.
No. 42 No. 151
Genepai District.
No. 129 No. 141
Batangtu District.
No. 200 No. 17
Skalau District.

PONGO PYGMÆUS, BORNEO
⅙ Nat. Size.

MEASUREMENTS OF OLD ADULT MALE OURANG SKULLS IN SELENKA COLLECTION FROM BORNEO.

PONGO PYGMÆUS HOPPIUS	No.	Total length.	Occipito-nasal length.	Intertemporal width.	Breadth of braincase.	Hensel.	Zygomatic width.	Extreme width of bony orbits.	Width of rostrum at canines.	Palatal length.	Length of upper canines.	Length of upper molar series.	Length of mandible.	Length of lower molar series.	Breadth of upright portion of mandible at posterior molar.
Pongo landakensis (Selenka)	1	240	167	59	103	182	174	112	77	93	33.6	57.4	184	72	67
Pongo landakensis (Selenka)	6	246	174	73	115	172	173	115	74	94.2	33.4	59	170	73.1	78.3
Pongo l. dadappensis (Selenka)	169	242	168	75	103	174	174	127	73	94.8	32.8	55.8	182	65.3	59.1
Pongo l. dadappensis (Selenka)	183	242	171	57	96	165	182	123	76	97.4	33.6	62.6	188	68.6	77.4
Pongo l. dadappensis (Selenka)	165	238	170	69	104	161	167	119	73	91.9	26.7	50.7	163	63.4	74.2
Pongo l. dadappensis (Selenka)	168	243	177	67	105	168	172	111	69	92.3	39.6	65.5	180	68	69.8
Pongo l. dadappensis genepai (Selenka)...	151	232	165	56	92	177	174	113	77	96	36.3	57.6	174	68.7	83
Pongo l. dadappensis genepai (Selenka)...	42	228	163	57	91	154	163	106	63	80.3	32.5	55.2	176	65.2	65.5
Pongo l. skalauensis (Selenka)	17	207	157	61	96	144	167	120	66	79.1	25.5	57.4	163	68.6	64.6
Pongo l. skalauensis (Selenka)	18	200	166	64	96	168	172	117	74	98.3	—	53.5	162	66.1	74.6
Pongo l. skalauensis (Selenka)	100	234	164	62	106	159	168	120	67	86.9	27.3	52.8	157	63.7	72.5
Pongo l. skalauensis (Selenka)	200	248	149	64	91	163	158	104.1	65	83.5	26.7	54.9	158	67	70.3
Pongo l. batangtuensis (Selenka)	23	232	164	62	104	159	150	109	67	94.7	34.1	56	175	65.8	64.7
Pongo l. batangtuensis (Selenka)	29	231	151	67	91	159	163	106	68	81.4	33.2	58.9	155	69.5	74.8
*Pongo l. batangtuensis (Selenka)	41	225	158	65	100	162	165	111	68	87.1	28.4	59.1	149	66.5	66.6
Pongo l. batangtuensis (Selenka)	141	239	171	74	105	172	174	124	73	85.2	33	61.7	167	70.2	73.1
Pongo l. batangtuensis (Selenka)	10	227	165	68	95	163	184	114	72	86	—	58	165	63.1	68
Pongo l. batangtuensis (Selenka)	?	246	175	65	93	178	154	118	68	105	36	58	158	67.4	64.7

*This skull is not that of a freshly killed specimen, but is weather worn and was probably found in the forest.

GENUS II. GORILLA. GORILLAS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

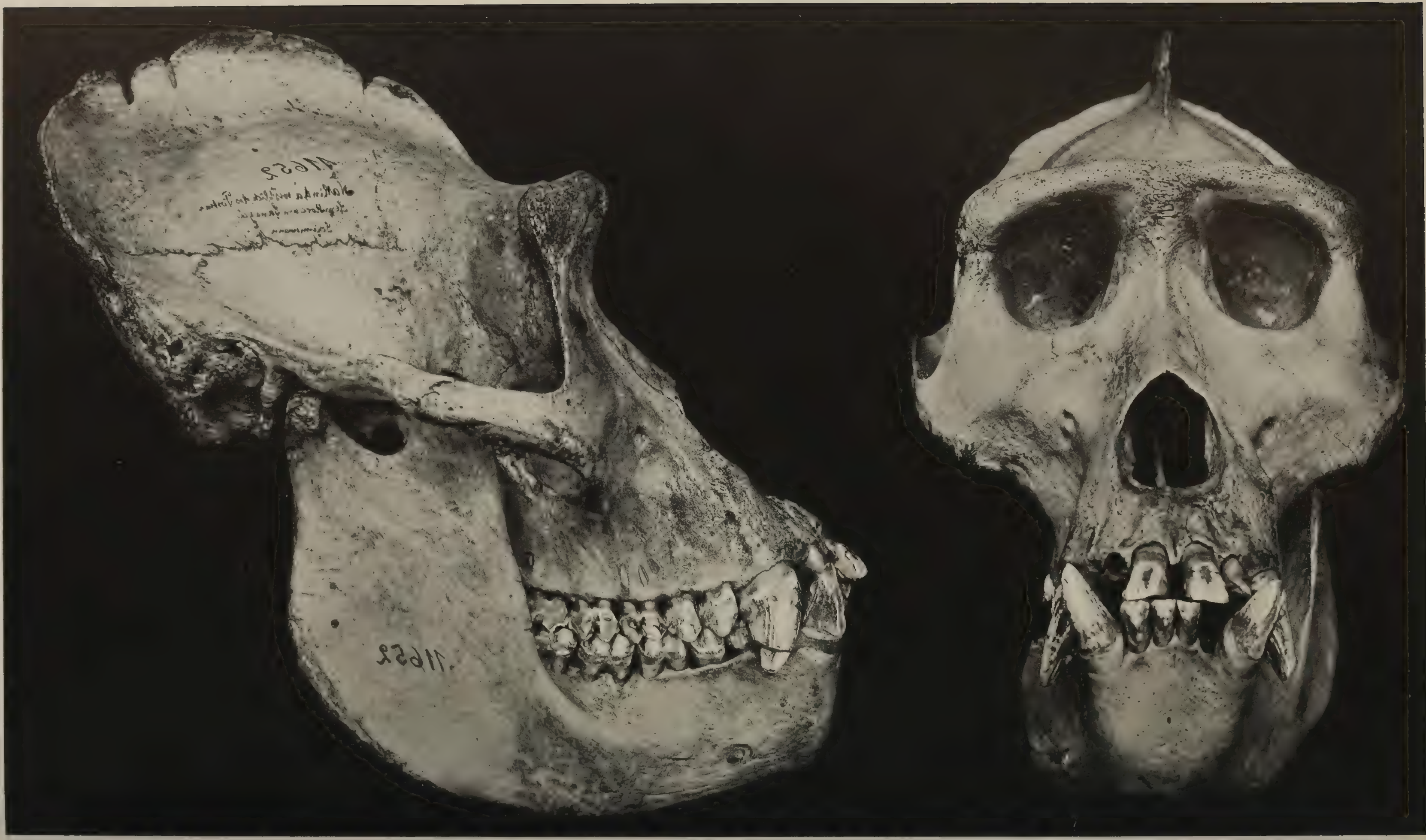
GORILLA I. Geoff., Compt. Rend., XXXIV, 1852, p. 84. Type *Troglodytes gorilla* Wyman.

Size large; body stout, heavy; legs short; arms long, head large, nose broad, flat, grooved longitudinally; muzzle broad, mouth large; upper lip short, lower protrudable; eyes large, ears naked, pointed, with pendulous lobula on lower margin. Braincase small; supraorbital ridges greatly developed. Great toe opposable, large, flat; lower joints of second, third and fourth toes united by a web. Arms reach to middle of legs below knees when the animal stands upright; hands wrinkled, thickly haired on back; the thumb short and thick with a broad nail. Canines very large; upper molars with four cusps, the posterior molar the largest; anterior lower molar with five cusps, three outer, two inner. Brain narrow, ovate, small end forward; cerebrum not extending beyond cerebellum; a keel present upon the orbital surface of the frontal lobes.

The genus Gorilla contains the largest species of the Great Apes, which, of all mammals, in some particulars approach nearest to man. The three genera which include all the known species, Pongo, Gorilla and Pan have received different serial arrangements, according to the opinions of various writers, as to the greatest affinity which any particular genus might exhibit, to man. Professor Owen who has written several memoirs on these Apes considers that the Gorilla is nearest to man, and does not think the difference between it and the Chimpanzee is sufficient to place them even in separate genera. Professor Owen bases his opinion of the Gorilla being closer to man than any other ape upon the following characters:

"1st. The coalesced central margins of the nasals are projected forward, thus offering a feature of approximation to the human subject, which is very faintly indicated, if at all in the *T. niger* (Chimpanzee).

"2nd. The inferior or alveolar part of the premaxillaries, on the other hand, is shorter and less prominent in the *T. gorilla* than in the *T. niger;* and in that respect the larger species deviates less from man.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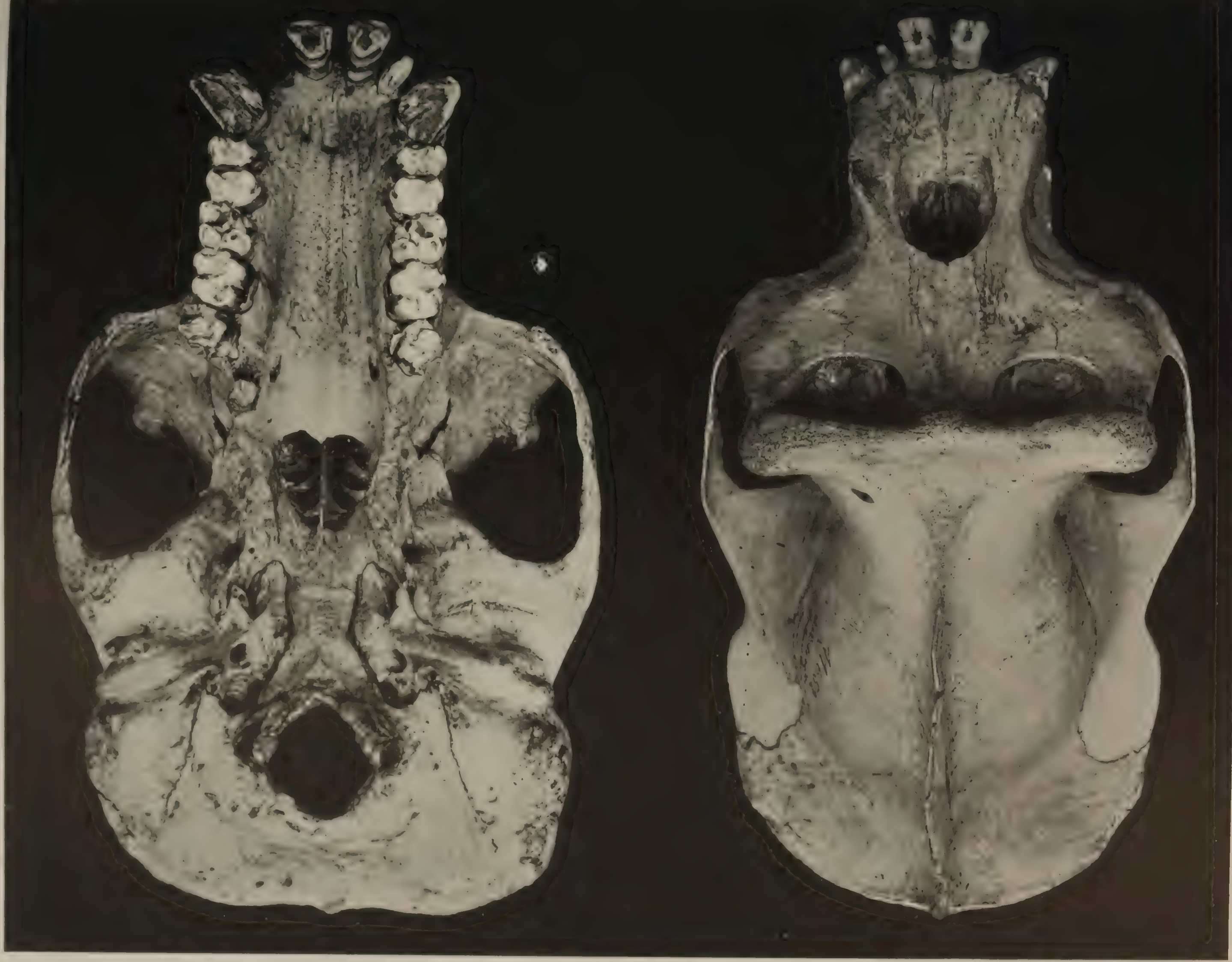


GORILLA GORILLA.

SIDE VIEW REVERSED.

No. 11652 Berlin Mus. Coll. ⅔ Nat. Size.

"3rd. The next character, which is a more anthropoid one, though explicable in the greater weight of the skull to be poised on the atlas, is the great prominence of the mastoid processes in the *T. gorilla,* which are only represented by a rough ridge in the *T. niger.*

"4th. The ridge which extends from the *ecto-pterygoid* along the inner border of the foramen ovale terminates in the *T. gorilla* by an angle process answering to that called 'styliform or spinous' in man, but of which there is no trace in *T. niger.*

"5th. The palate is narrower in proportion to the teeth in the *T. gorilla,* but the premaxillary portion is relatively longer in the *T. niger.*"

In contradistinction to this Dr. Wyman states as follows: "The larger ridge over the eyes, and the crest on top of the head and occiput, with the corresponding development of the temporal muscles, form the most striking features. The submaxillary bones articulating with the nasals, as in the other quadrumana and most brutes; the expanded portion of the nasals between the frontals, or an additional osseous element of this prove an independent bone; the vertically broader and more arched zygomata, contrasting with the more slender and horizontal ones of the Chimpanzee; the more quadrate foramen lacerum of the orbit; the less perfect infraorbital canal, the orbits less distinctly defined; the larger and more tumid cheek bones; the more quadrangular nasal orifice, which is depressed on the floor; the greater length of the ossa palati; the more widely expanded tympanic cells, extending not only to the mastoid process, but to the squamous portion of the temporal bones—these would, of themselves, be sufficient to counterbalance all the anatomical characters of the (enge-ena) gorilla.

"When, however, we add to these the more quadrate outline of the upper jaws; the existence of larger and more deeply-grooved canines; molars with cusps on the outer side, longer and more sharply pointed; the dentes sapientiæ of equal size with the other molars; the prominent ridge between the outer posterior and the anterior inner cusps; the absence of a crista-galli; a cranial cavity almost behind the orbits of the eyes; the less perfectly marked depressions for the cerebral convolutions; and above all, the small cranial capacity in proportion to the size of the body, no reasonable grounds for doubt remain that the enge-ena occupies a lower position, and consequently recedes farther from man than the Chimpanzee. * * *

"While the proportions of the ulna and humerus are more nearly human than the Chimpanzee, those of the humerus and femur recede much further from the human proportions than they do in the Chimpanzee, as will be seen in the following measures:

	Humerus.	Femur.
Man	15.0.	18.5.
Chimpanzee	10.9.	11.0.
Enge-ena	17.0.	14.0.

"Thus in one the femur is three inches longer than the humerus. In the Chimpanzee these bones are nearly of the same length; and in the enge-ena the humerus is three inches longer than the femur, indicating on the part of the enge-ena a less perfect adaptation to locomotion in the erect position than in the Chimpanzee."

Whether the conclusion last reached by the distinguished comparative anatomist judging from these bones is altogether correct, or not, reports of those, who have seen the gorilla in its haunts, appear to establish the fact that this Ape walks more frequently upon its legs only, than does the Chimpanzee, but the position assumed can only be called erect when compared to going upon all-fours, for even Du Chaillu, who leans towards the opinion expressed by Prof. Owen states that "when standing up the knees are bent at the joints outward, and his back has a stoop forward" not a very erect attitude, and his walk is a 'waddle' and he "balances himself with his arms." On the other hand I have seen a Chimpanzee walk as erect and without effort, alone and unsupported as any man. In a certain degree, no doubt, this was the result of instruction and practice, but it proved that this Ape could walk erect with ease, and it is exceedingly doubtful, considering the Gorilla's huge bulk, the enormous protruding paunch, the short comparatively feeble legs, and the almost entire lack of neck to permit the head to be thrown back, that walking erect would ever be other than a difficult feat, and one requiring much effort. It might stand comparatively erect, when it rises to make an attack, but its general 'build' is more favorable to going on all-fours, its usual mode of progression, than to the erect method. The Gorilla has thirteen pairs of ribs; man but twelve, but excepting the skull, the skeleton is more nearly like that of man than of any anthropoid ape. The skull of the Gorilla with the very limited capacity for the brain, and this last having the cerebrum not extending beyond the cerebellum, indicates a very low order of intelligence, and degrades the animal to the ferocious beast that he is. In the young the skull has a more rounded braincase, but as its possessor grows older the form changes; the braincase lengthens, not, however, giving an increased capacity for the brain, for this does not increase either in weight or size, the bony structure alone monopolizing the increase in growth, the huge crest appears in the male, the facial region lengthens and the orbital ridges increase, producing the scowling visage characteristic of the creature. Altogether it is the head of a brute, whose instincts are bestial, and outwardly without a vestige of resemblance to man beyond the possession of organs similar to his in appearance.

There have been a number of species and races described at various times, on, what must be considered as very inadequate material, for it is not easy to secure specimens in sufficient numbers and of various ages, to obtain the necessary knowledge of the coloring of the pelage from infancy to old age, and also the differences which may exist caused by the sex of the individual. A number of the races, accepted at present, rely mainly if not entirely for their distinctive characters on the color of their pelage and its method of distribution, but this may be caused entirely by the age of the individual, and it appears to be the general opinion of those who have had any experience with the wild Gorilla, that the older the male is the grayer he becomes, until, if he lives long enough, he is almost entirely gray, being then in a pelage resembling that of the very adult specimen in the Berlin Museum from Mokbe, southern Cameroon. It will require a large series of examples from youth to old age to exhibit the changes that take place during life, before this can be definitely ascertained, and the distinctive value of the present accepted races can only then be decided.

The crania of the Gorillas vary in a most extraordinary degree, even among individuals from similar, even the same localities; and it is only equalled among the Primates by the crania of the other great Apes, the Ourangs and Chimpanzees.

It can safely be asserted that there are no cranial characters that can be depended upon for specific or even racial differences, for when one skull would seem to possess them another from an individual taken in the same locality would not have them. Of course the crania of the three genera of the great Apes can be distinguished at a glance, but, the species or race to which an individual of one of these belongs, cannot be determined by a critical examination, and this, in every case would prove a failure if the locality from which the skull came was unknown, and even if this should be ascertained, such as "Cameroon," it would be extremely doubtful if it was attributed to the proper race, no skin accompanying it, or if the latter was in a pelage, probably caused by age or sex, that was different from the type. Three races have been described from Cameroon—*diehli* from northern Cameroon; *matschie* and *jacobi* from southern and western Cameroon, and, when more material has been obtained, these may be entitled to a racial distinction; for it is hardly to be supposed that there would exist in the same tract of country, distinct forms of these Apes, whose roving habits, caused by the necessity of obtaining food in large quantities, compel them to travel widely. With our present material their rank cannot be determined, but the variations shown in the skulls now in the collections, are so considerable that they give no clue towards a settlement of the problem how any kind of distinctive rank can be established. The specimens obtained exhibit a very large animal, but more material is required before it can be proved if more than one race, of the three described, exists.

From the Gaboon two forms have been described, G. GORILLA, longest known species of the genus, and *G. g. castaneiceps,* but it is extremely doubtful if the last one is entitled to any racial distinction.

There are probably but two species of Gorillas, so far as our present knowledge permits a decision to be reached. G. GORILLA from the Gaboon, and G. BERINGERI from German East Africa. These have little in common with each other, and their widely separated habitats preclude all likelihood of any approach or contact, but the status of the Cameroon Gorillas has yet to be determined.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1847. *Wyman, in Journal of the Natural History Society of Boston.* GORILLA GORILLA, first described from a skull as *Troglodytes gorilla.*

1848. *Owen, in Proceedings of the Zoological Society of London.* GORILLA GORILLA from the Gaboon, supposed to be a species of Chimpanzee, and called *Troglodytes savagei.*

1851. *Owen, in Transactions of the Zoological Society of London.* A paper on the osteology of the GORILLA GORILLA, and comparisons made between its skull and dentition and those of other Anthropoid Apes.

1859. *Owen, in Transactions of the Zoological Society of London.* Memoir on an example of GORILLA GORILLA received in spirits, with a comparison of its external characters and those of other Anthropoid Apes, and he decides that the *Gorilla* is nearest to man, and not generically different from the *Chimpanzee*!

1862. *Slack, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
GORILLA CASTANEICEPS first described in the genus *Troglodytes,* from a cast of the head.

1903. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*
GORILLA BERINGERI first described.

1904. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*
Gorilla gorilla diehli first described as *Gorilla diehli.*

1904. *Rothschild, in Proceedings of the Zoological Society of London.*
Gorilla gorilla matschie first described, and a review of the species and races as recognized by the Author. Two species are accepted, G. GORILLA with the following races: *G. g. matschie; G. g. diehli;* and G. BERINGERI from German East Africa. *G. castaneiceps* Slack is considered an aberration of G. GORILLA.

1905. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*
Gorilla gorilla jacobi first described as *Gorilla jacobi.*

1906. *Rothschild, in Proceedings of the Zoological Society of London.*
In this paper a résumé of recently received skins and skulls of Gorilla is given, with comparative measurements of the crania of the single species G. GORILLA and its four races: *diehli, beringeri, jacobi* and *matschie,* showing how greatly they vary from each other. Unfortunately this comparison was not continued to show how greatly the crania of the individuals of each form also differed from each other. In order to account for these races of Gorilla being found in Cameroon the Author supposes they cannot swim and therefore the races are separated and entirely isolated by the large rivers. This is a view taken from Selenka, in defense of his creating various species of Ourang, but, as in Selenka's case, no proofs whatever, either of the Gorilla's lack of ability to swim or of its confinement to certain districts is forthcoming, and it may be considered exceedingly doubtful if this Ape is restricted in its wandering "as if on islands," for the 'dry seasons' in tropical lands reduce the volume of water in the rivers to such a degree as to disclose their beds in many places, even sometimes of the largest streams, thus affording an easy passage from one bank to the other.

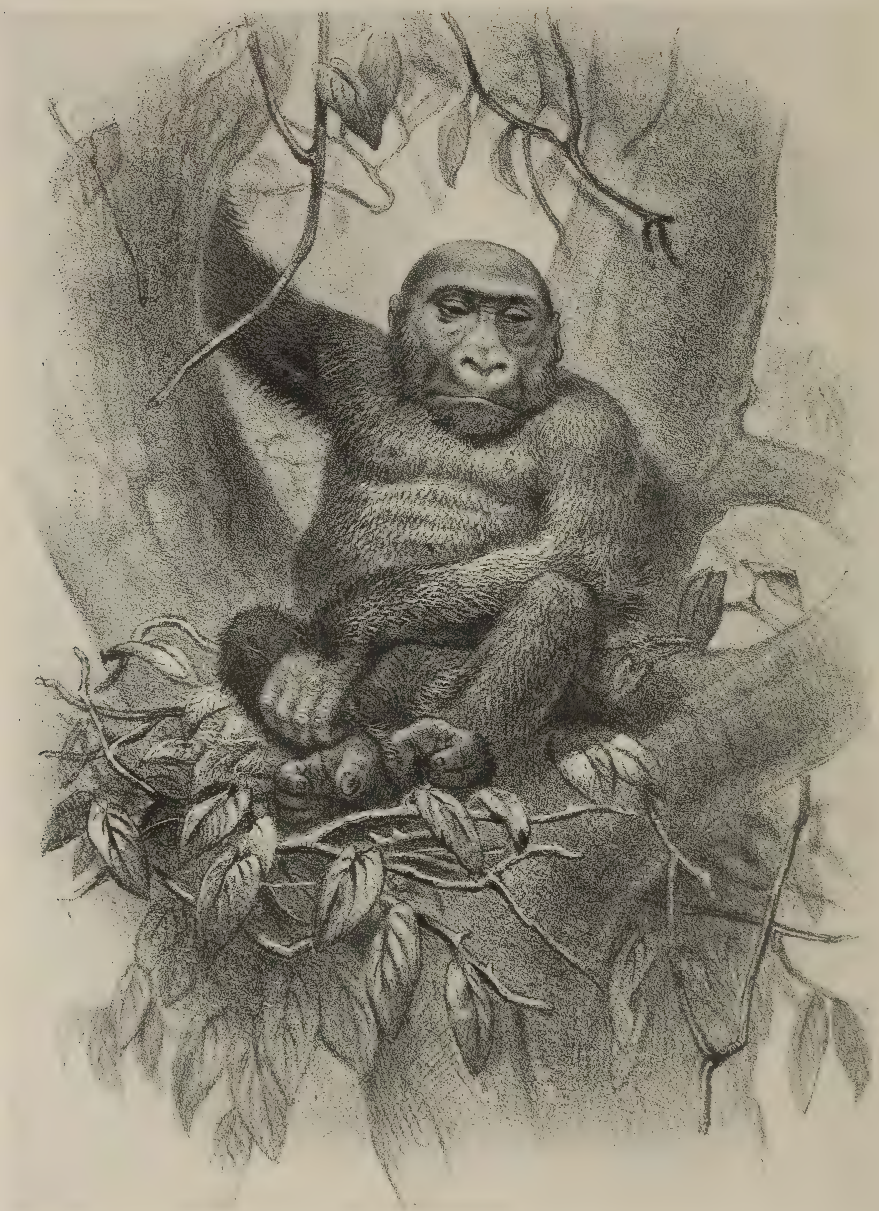
GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

It cannot be said that the dispersion of any species or race of the described Gorillas is definitely known at the present time, as the limited number of specimens in the various museums is too small to give any idea of the range, the majority giving us merely the type locality, and beyond this affording little information. Beginning with the species longest known, G. GORILLA is found in the Gaboon, not going according to Du Chaillu south of Sette Cama, but how far it ranges into the interior is not known. Du Chaillu obtained specimens on the Fernand Vaz and Ofoubon Rivers. *G. g. castaneiceps* from the Fernand Vaz in French Congo, in the Kamma country, is by no means established as a distinct race. Most probably this is the same as G. GORILLA. In Cameroon we have at Yaundi, *G. g. matschie,* and at Lobo-Mundung *G. g. jacobi* was found. All these from South Cameroon. In the north, at Oboni, *G. g. diehli* was found. On the east coast in the German Protectorate, at Kirunga G. BERINGERI was taken.

KEY TO THE SPECIES AND SUBSPECIES.

- A. With gray or white on back.
  - *a.* No chestnut patch on head, but mixed black and red hairs.
    - *a.′* Rostrum broad, rather lengthened.
      - *a.″* Without beard.
        - *a.‴* Legs below knees black.
          - *a.⁗* Skull very large, tooth row long .... *G. gorilla.*
          - *b.⁗* Skull very large, teeth smaller, tooth row shorter ...... *G. g. matschie.*
      - *b.″* With beard.
        - *a.‴* Hair short .... *G. g. diehli.*
        - *b.‴* Hair very long, thick .... *G. beringeri.*
    - *b.′* Rostrum short, narrow .... *G. g. jacobi.*
  - *b.* With chestnut patch on head.
    - *a.′* Chestnut patch not covering nape ..... *G. g. castaneiceps.*

The above key retains the species or races as they are more or less accepted at the present time, and they are so left simply because



Gorilla gorilla, juv.

the material in the Museums of the world is not sufficient to *prove* that any one of them is not entitled to the rank assigned it. One may have sincere doubts regarding the status given examples, but *doubts* are not *proofs*, and the latter alone permit decided opinions to be reached.

GORILLA GORILLA (Wyman).

Troglodytes gorilla Wyman, Journ. Nat. Hist. Soc. Bost., V, 1847, p. 419, pls. I-IV; Owen, Proc. Zool. Soc. Lond., 1848, p. 53; 1859, p. 1; *Id.* Trans. Zool. Soc. Lond., IV, 1851, p. 75, pls. XXVII, XXVIII; 1866, p. 243, pls. I-XIII, (read 1859); Du Chaillu, Exped. and Expl. Equat. Afr., 1861, p. 388; Read, Proc. Zool. Soc. Lond., 1863, p. 171; Mivart, Proc. Zool. Soc. Lond., 1865, p. 581; Du Chaillu, Journ. Ashango-Land, 1894, p. 56; Sclat., Proc. Zool. Soc. Lond., 1877, p. 303; Cunningh., Mem. Roy. Irish Acad., 1886, p. 1; Forbes, Handb. Primates, II, 1894, p. 180; Matschie, Sitzungsb. Gesell. Nat. Freund., Berlin, 1904, p. 47.

Gorilla gina I. Geoff., Archiv. Mus. Hist. Nat., Paris, VIII, 1852, pls. II-IV; Dahlb., Stud. Zool. Fam. Reg. Natur., fasc. I, 1856, p. 84, Tab. II, III; Pousarg., Ann. Scien. Nat., Paris, 7me Sér., III, 1896, p. 141.

Troglodytes savagei Owen, Proc. Zool. Soc. Lond., 1848, p. 27; I. Geoff., Rev. Mag. Zool., 1853, p. 104; Reichenb., Vollständ. Naturg. Affen, 1862, p. 106, figs. 473, 495; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 7.

Pithecus gesilla (!) Blainv., Ostéog., 1839-64, pls. II, V bis.

Troglodytes gorilla Duvern., Archiv. Mus. Hist. Nat., Paris, VIII, 1855, p. 29.

Satyrus adrotes Meyer, Wiegm., Archiv., 1856, p. 182.

Anthropopithecus gorilla Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 2.

The Gorilla Bedd., Proc. Zool. Soc. Lond., 1899, p. 65, text figs. 1-7, Sp. ?

Gorilla gorilla Rothsch., Proc. Zool. Soc. Lond., 1904, p. 416; 1906, p. 465.

GORILLA.

Type locality. Gaboon, West Africa.

Geogr. Distr. Gaboon, not south of Sette Cama?, West Africa; range into interior unknown.

Color. Face and chest bare, black; sides of head before ears black speckled with yellow; arms and belly black; back and outside of thighs gray grading into black towards ankles and on feet; hands black; no beard; top of head black, nape mixed black and red.

Measurements. Height, 5 ft. 10 in. Average male, 5 ft. 3 in. Skull: total length, 330; occipito-nasal length, 235; intertemporal width, 78.1; breadth of braincase, 104.3; median length of nasals, 46; palatal length, 100; Hensel, 183; zygomatic width, 170; length of upper molar series, 68; length of mandible, 185; length of lower molar series, 80.

The Gorilla, the largest and most ferocious of all the great Apes, was the last one made known to Science. Rumors of a huge Ape existing in Africa had prevailed for a long time but it was not until 1846 that the Rev. Dr. J. L. Wilson discovered a skull which he gave to Dr. Savage of Boston, from which Drs. Savage and Jeffries published the first account of this remarkable animal. Other memoirs followed as additional material was obtained, and at length the entire skeleton was described by Prof. Owen (l. c.). Hanno, somewhere about the sixth century B. C. seems to have been the first to have met with the huge Apes during his celebrated voyage beyond the Pillar of Hercules, and on an island in a bay he called the "Horn of the South." This island contained a lake in which was an island full of wild hairy men. Three 'women' were captured the 'men' all getting away, and these fought so savagely they were obliged to kill them, preserving the skins which were brought to Carthage and placed in a temple of Juno and were still there when the city was destroyed.

Gorillas were not supposed to be gregarious, and Du Chaillu, as will be noticed in the following extract from his first book stated that they were not, but in "Ashango Land" he changes his opinion, from his experience on the Fernand Vaz, where he saw Gorillas assembled together in considerable numbers. In "Ashango-Land" the following is recorded, p. 56: "A woman, belonging to a neighboring village, had told her people that she had seen two squads of female gorillas, some of them accompanied by their young ones in her plantain field. The men resolved to go in chase of them, so they armed themselves with guns, axes and spears and sallied forth. The situation was very favorable for the hunters; they formed a line across the narrow strip of land and pressed forward, driving the animals to the edge of the water. When they came in sight of them they made all the noise in their power, and thus bewildered the gorillas, who were shot or beaten down in their endeavors to escape. There were eight adult females altogether, but not a single male. The negroes thought the males were in concealment in the adjoining woods, having probably been frightened away by the noise."

Then Du Chaillu states "this incident led me to modify somewhat the opinions I had expressed in 'Adventures in Equatorial Africa,' regarding some of the habits of the gorilla. I there said that I believed it impossible to capture an adult female alive, but I ought to have added, unless wounded. I have also satisfied myself that the gorilla is more gregarious than I formerly considered it to be; at least it goes in bands more numerous than those I saw in my former journey. Then I never saw more than five together. I have myself seen, on my present expedition, two of these bands of gorillas numbering eight or ten, and have had authentic accounts from the natives of other similar bands. It is true that, when gorillas become aged, they seem to be more solitary, and to live in pairs, or, as in the case of old males, quite alone. I have been assured by the negroes that solitary and aged gorillas are sometimes seen almost white; the hair becomes grizzled with age, and I have no doubt that the statement of their becoming occasionally white with extreme old age is quite correct."

These facts, the gregariousness of the Gorilla, and the change in the color of the hair, raise grave doubts as to their being any number of distinct species. If there were as many as are recognized, with much reserve, in this work, and they are accustomed to rove in considerable number, the country suitable for their habitation is too limited in extent to keep these bands from meeting and mingling together, which would be fatal to the maintenance of distinct species, and as some supposed forms owe their distinct position mainly to the color of the hair, (cranial characters being altogether too unreliable), if this is merely indicative of age, nothing remains upon which to establish a distinctive character. Du Chaillu was apparently the first European to meet with and kill this savage creature in its native forest, and although his description of their habits and actions when they advanced to fight in defense of themselves and families was received with much doubt, and by certain persons almost with derision, yet accounts of this animal related by others who have penetrated its secluded haunts, have proved that he was fairly correct in his statements. He has given in his book, "Expeditions and Explorations in Equatorial Africa" a long account of the habits of the Gorilla from which the following passages are taken.

"The gorilla," he says on commencing his narrative, "does not lurk in trees by the roadside and drag up unsuspicious passers-by in its claws and choke them to death in its vice-like paws; it does not attack the elephant and beat him to death with a stick; it does not carry off women from the native villages; it does not even build itself a house of leaves and twigs in the forest trees and sit on the roof as has been confidently reported of it. It is not gregarious even, and the numerous stories of its attacking in great numbers have not a grain of truth in them.

"It lives in the loneliest portions of the dense African jungle, preferring deep wooded valleys and also rugged heights. The high plains also, whose surface is strewn with immense boulders, seem to be favorite haunts. Water is found everywhere in this part of Africa, but I have noticed that the gorilla is always found very near to a plentiful supply."

He farther states that it is a restless beast rarely found in the same place two days at a time and this is caused by its struggle to obtain food, which consists of berries, pineapple leaves and other vegetable matter and of these it is a huge 'feeder.' Besides the things already mentioned it eats the wild sugar cane and a nut with a very hard shell which it cracks with its powerful jaws.

It sleeps sitting on the ground with its back against the trunk of a tree, and only the young ascend a tree to sleep amid the branches, and possibly the females may also occasionally do so.

Gorillas are very shy and at the least alarm the female runs off shrieking accompanied by the young if she has any. "Then the male, sitting for a moment with a savage frown on his face, slowly rises to his feet, and looking with glowing and malignant eyes at the intruders, begins to beat his breast, and lifting up his round head, utters his frightful roar. This begins with several sharp barks like an enraged or mad dog, whereupon ensues a long, deeply guttural rolling roar, continued for over a minute, and which, doubled and multiplied by the resounding echoes of the forest, fills the hunter's ears like the deep rolling thunder of the approaching storm. The horror of this animal's appearance at this time is beyond description. It seems as monstrous as a nightmare dream, so impossible a piece of hideousness, that, were it not for the danger of its savage approach, the hunter might fancy himself in some ugly dream." A hunter reserves his fire until the last moment for the onset of a gorilla no man could withstand for "one blow of that huge paw, with its bony claws, and the poor hunter's entrails are torn out, his breast bone broken, or his skull crushed."

"His walk is a waddle from side to side, his hind legs which are very short, being evidently somewhat inadequate to the proper support of the huge superincumbent body. He balances himself by swinging his arms, somewhat as sailors walk on ship-board; and the vast paunch, the round bullet-head joined awkwardly to the trunk with scarce a vestige of neck, and the great muscular arms, and deep cavernous breast, give to this waddle an ungainly horror, which adds to his ferocity of appearance. At the same time the deep-set gray eyes sparkle out with gloomy malignity; the features are contorted in hideous wrinkles; and the slight, sharply cut lips, drawn up, reveal the long fangs and the powerful jaws in which a human limb would be crushed as a biscuit.

"Fortunately the gorilla dies as easily as a man. A shot in the breast, if fairly delivered, is sure to bring him down. He falls forward on his face, his long muscular arms outstretched, and uttering with his last breath a hideous death cry, half roar, half shriek, which, while it announces his safety to the hunter, yet tingles his ears with a dreadful note of human agony."

The walk of the Gorilla is usually on all-fours, not erect. "In this posture its arms are so long, that the head and breast are raised considerably, and as it runs the hind legs are brought far beneath the body. The leg and arm on the same side move together, which gives the beast a curious waddle. It can run at great speed."

The adult Gorilla is untamable, and its strength very great. When erect the knees are bent and the back has a "stoop forward."

The natives eat the meat which is dark red and tough, and the skin is thick and strong. The height of the Gorilla varies greatly and individuals have been taken from 5 feet 2 inches to over six feet. The color changes with age, old Gorillas, as the negroes told Du Chaillu are quite gray all over.

There seem to be really only two species of Gorilla and those which have been separated as distinct, and almost invariably given specific rank by their describers, can only properly be considered, if separable at all, as races of G. GORILLA. The individual variation observed in crania is often very great and occasionally, as in the type skull of *G. g. jacobi,* is extraordinary, but if we permit ourselves to recognize such a skull as proofs of a distinct species, though a resident of the same geographical district as the species from which it was separated, we throw open wide the door through which error and confusion can easily pass, the result being a multiplication of forms unworthy of serious consideration.

Gorilla gorilla matschie Rothschild.

Gorilla gorilla matschie Rothsch., Proc. Zool. Soc. Lond., 1904, p. 415, figs. skull, 1906, p. 465.

Type locality. Yaundi, Southern Cameroon. Type in Tring Museum.

Genl. Char. Limbs shorter, stouter; hair longer; back and fore part of legs grayer than in G. gorilla; crest of skull higher; skull shorter.

Color. Male. Top of head and nape mixed red and black; sides of face black speckled with yellow; sides of neck, throat and chest naked, belly speckled with yellow, red and black; legs and feet, arms and hands black; lower part of hind neck and back gray. Ex type Tring Museum.

Female. Top of head reddish; hair on sides of head, long, black; lower part of chest and belly black; outer side of arms and legs black, hands and feet black; back dark brown, lightest on rump. Ex type Tring Museum.

Measurements. Male. Height, 5 ft. 6 in. Skull: total length, 340; occipito-nasal length, 265; intertemporal width, 64.2; breadth of braincase, 100.6; length of braincase, 125; Hensel, 49.7; zygomatic width, 190; median length of nasals, 50.6; length of upper tooth row, 67.1; length of upper canines, 38.6; length of lower tooth row, 80; palatal length, 126; height of crest at occiput, 53.3; length of mandible, 200.

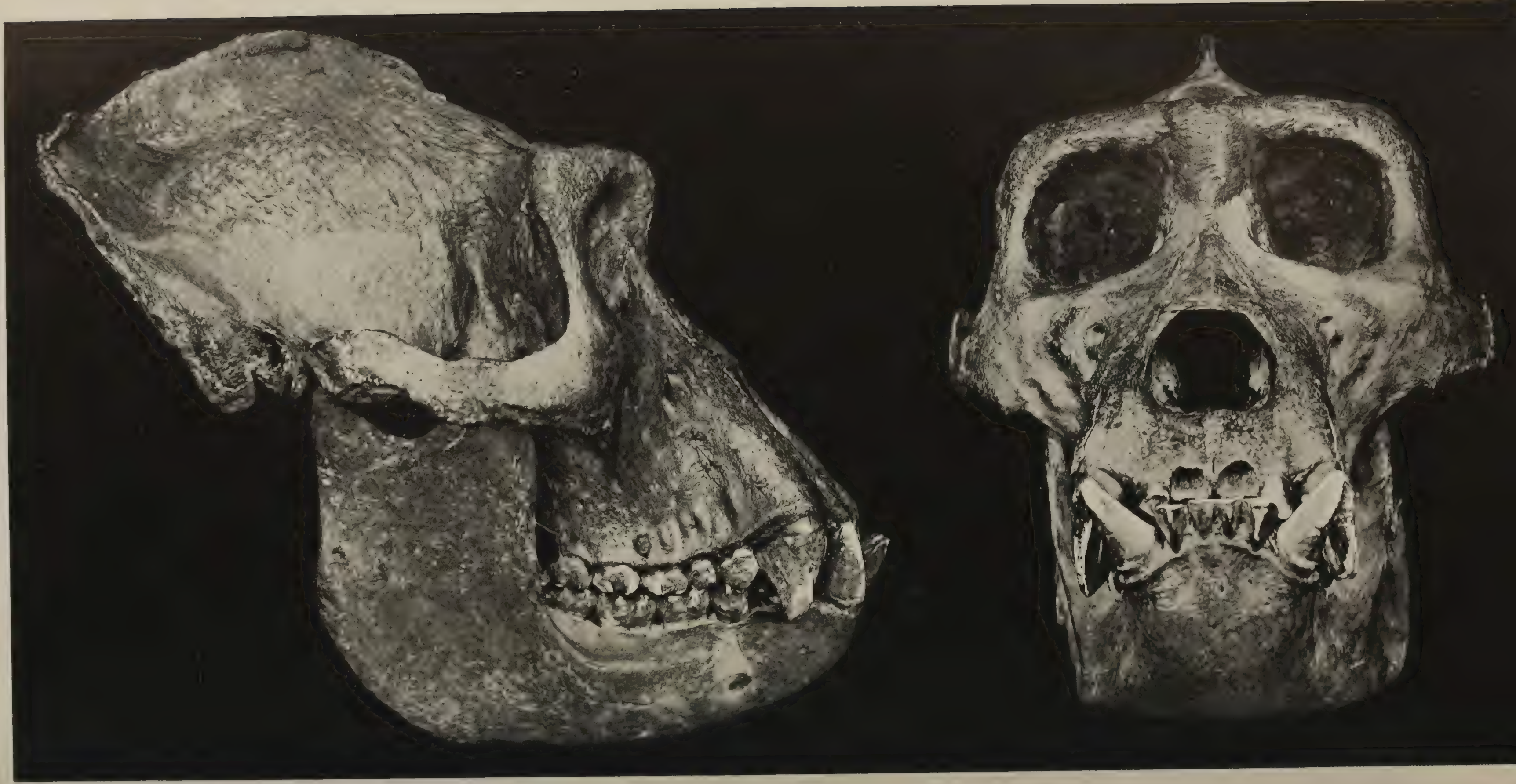
The skull has a broad face, orbital ridges elevated; nasals broad, deep depression behind orbits; at anterior end the crest commences and rises above braincase, reaching its greatest breadth at occiput, where it meets the broad, rather flat lateral expansions extending around the braincase from the mastoid region; braincase broad and of medium length; occipital edge rounded not pointed. This skull is of very large dimension, massive in all its proportions, the brow rather high, raised above the level of the braincase. Ex type Tring Museum.

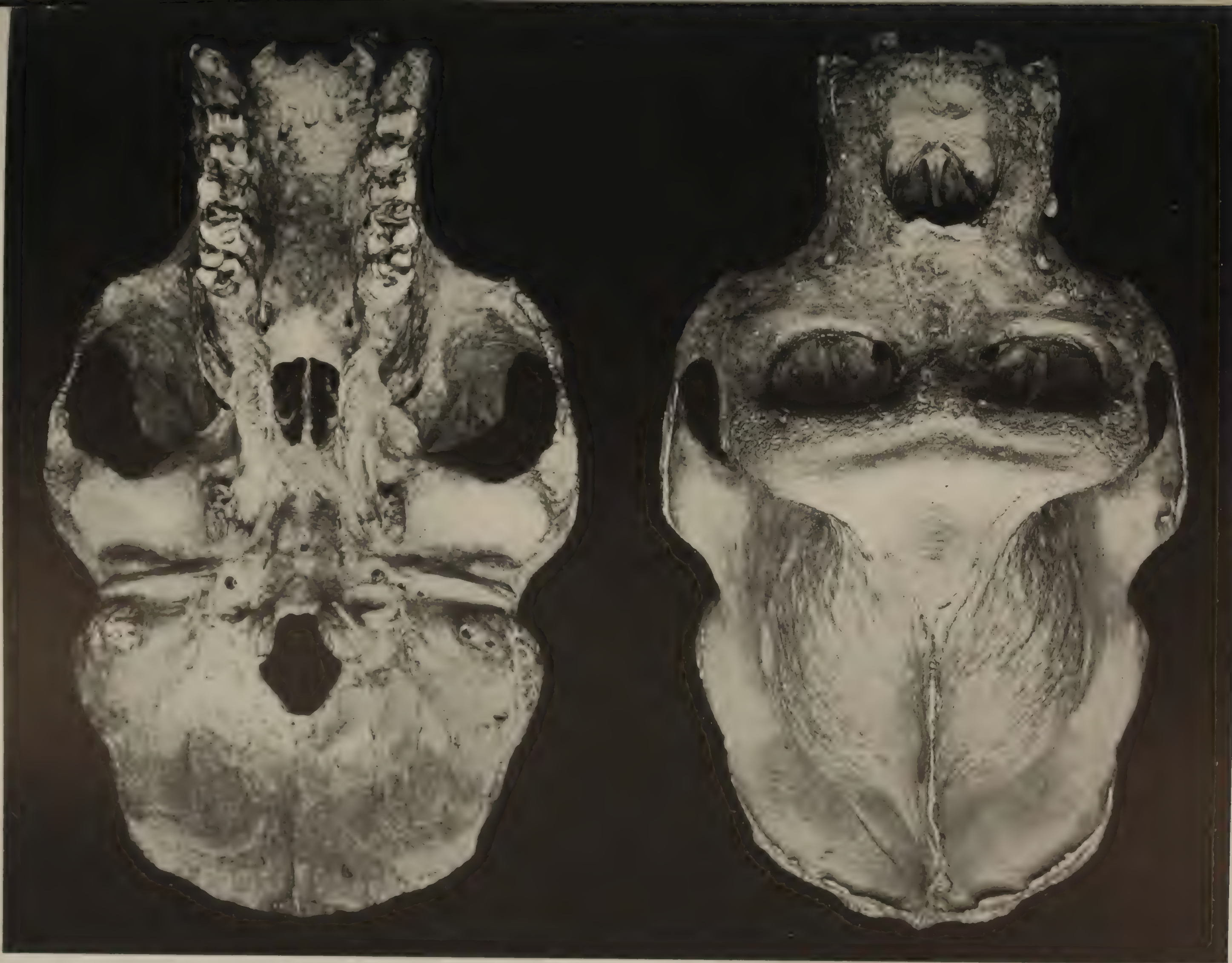
Gorilla gorilla diehli Matschie.

Gorilla diehli Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1904, p. 52; Rothsch., Proc. Zool. Soc. Lond., 1904, p. 418, figs. skull, 1906, p. 465.

Type locality. Northern Cameroon, West Africa.

Geogr. Distr. Oboni, Northern Cameroon, and Mokbe near border of French Congo. West Africa.

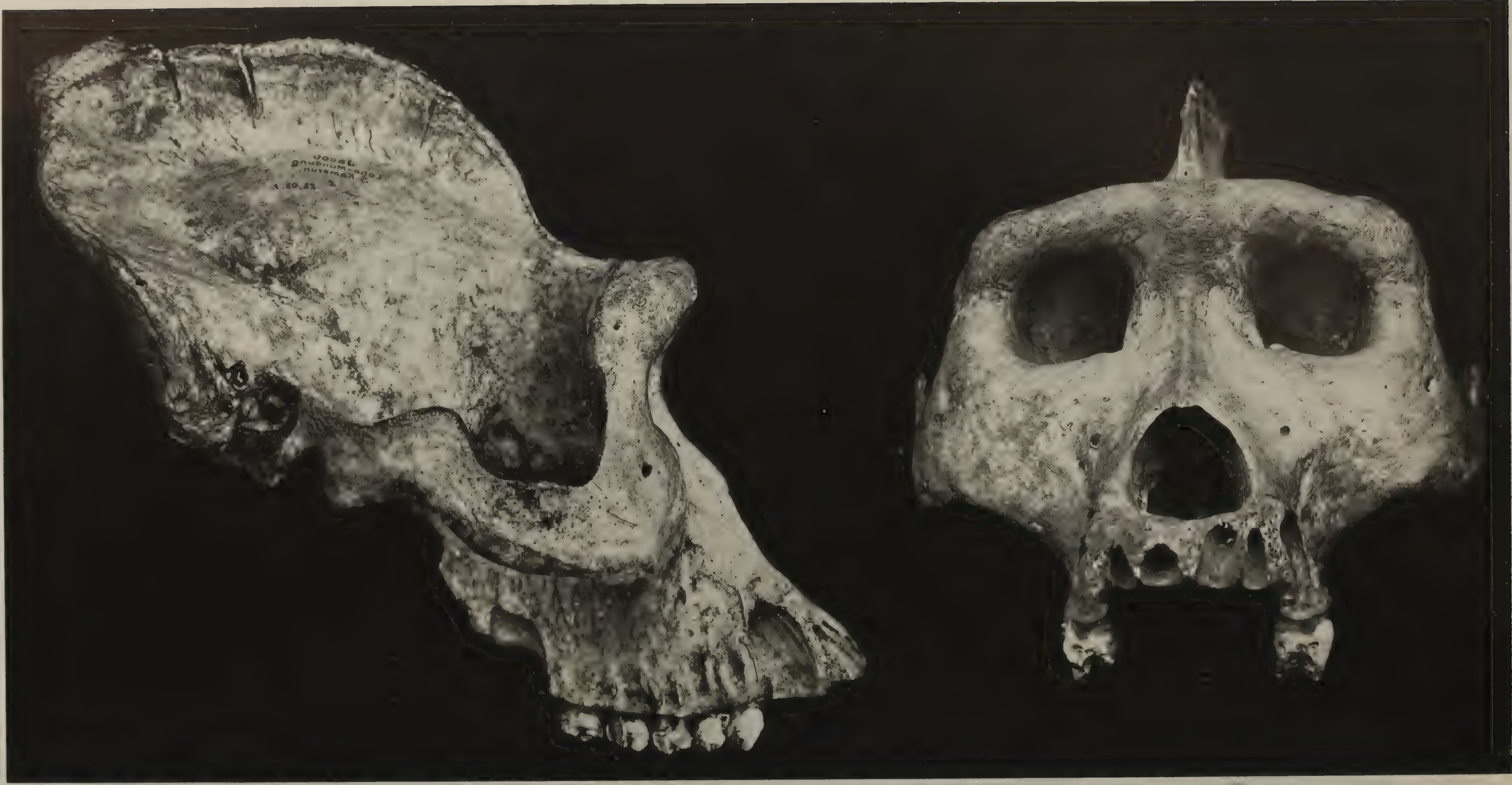


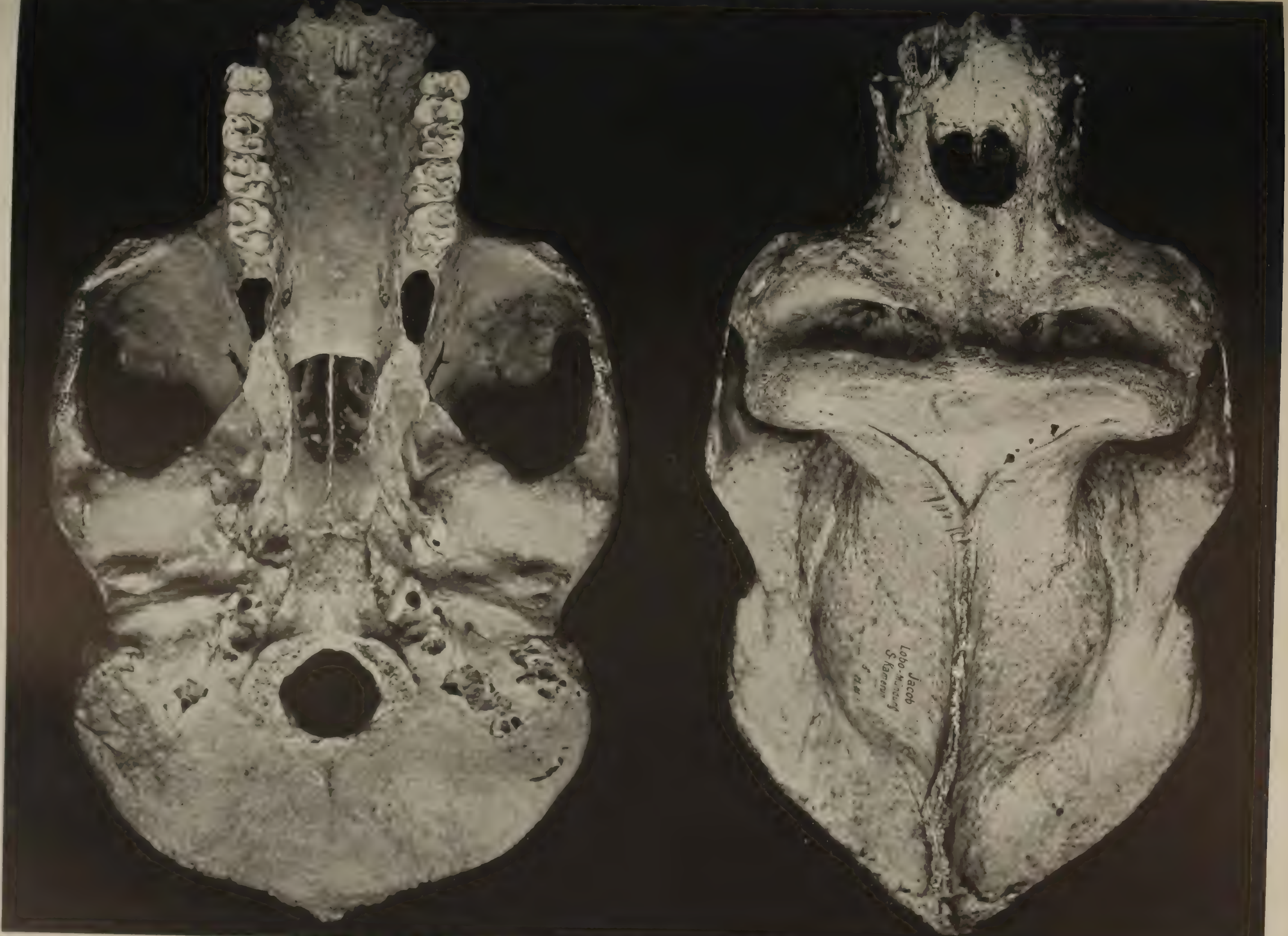


GORILLA MATSCHIE.

SIDE VIEW REVERSED.

No. ——— ♀ Berlin Mus. Coll. ⅔ Nat. Size.




Jacob
Lobo-Mündung
S-Kamerun

GORILLA JACOBI.

No 28.05.1 Berlin Mus. Coll. ⅔ Nat. Size.

A JACOBI.

The type skull of this form is broader and shorter than G. BERINGERI with a smaller braincase, but much broader face and shorter rostrum; the flat expansions at sides and back of braincase are very wide and the posterior outline is rounded, curving inward in center; two broad ridges from outer edge of orbits meet at about fronto-parietal suture and may develop into a sagittal crest, but this is broken away; palate much shorter and narrower than G. BERINGERI and teeth smaller. Since the description of the skull was published, Hon. Walter Rothschild received a skin of this form, of which the following is a description:

Color. Head black, forehead with a few brown hairs; arms and shoulders black; back, chest, nape, belly and legs below knees in front black; beard on chin and on sides of face long, black; middle of back grayish white; lower part of back, rump and outer sides of thighs iron gray grading into black towards ankles; hands and feet black; inner side of legs black; top of head black speckled with red.

Measurements. Total length, 320; occipito-nasal length, 266; Hensel, 185; zygomatic width, 178; intertemporal width, 75; extreme width of orbits, 114; height of orbit, 43; width of orbit, 45; median length of nasals, 41; width of rostrum at canines, 64; length of braincase from orbital ridge to occiput, 180; greatest breadth of braincase, 104; palatal length, 102; postpalatal length, 185; width of palate at pm^1. 37; length of upper molar series, 59; length of m^1. 13; width of m^1. 13. Ex type Berlin Museum.

GORILLA GORILLA JACOBI (Matschie).

Gorilla jacobi Matsch., Sitzungsb. Gesell. Naturf. Freunde, Berlin, 1905, p. 279; Rothsch., Proc. Zool. Soc. Lond., 1906, p. 465.

Type locality. Lobo-Mundung, South Cameroon, West Africa. Type in Berlin Museum.

A very large, long and comparatively narrow skull, with large crest and wide lateral expansions around the braincase; face very broad with low straight brow; rostrum short, narrow; the orbital ridges being about on a line with the braincase; crest beginning on posterior portion of frontal and extending to occiput where it meets the lateral expansions and causes the occipital outline to terminate in a point; zygomatic arch broad and heavy; palate broad and rounded. This is a massive low-browed, wide, but short-faced skull with a high crest and broad lateral expansion around braincase, with occipital outline pointed. The short, rather narrow rostrum is characteristic of this form.

Measurements. Total length, 393; occipito-nasal length, 328; Hensel, 230; zygomatic width, 193.5; intertemporal width, 78; extreme width of orbits, 118; height of orbit, 38; width of orbit, 41; median length of nasals, 51; width of rostrum at canines, 73; length of braincase, from orbital ridge to occiput, 226; greatest breadth of braincase, 110; palatal length, 124; width of palate at pm^1, 46; length of upper molar series, 62; length of m^1. 13; width of m^1. 15. Ex type Berlin Museum.

Gorilla gorilla castaneiceps (Slack).

Gorilla castaneiceps Slack, Proc. Acad. Nat. Scien. Phil., 1862, p. 159; Matschie, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1903, p. 259; Sclat., Proc. Zool. Soc. Lond., 1905, p. 56.

Type locality. Kamma. French Congo. Fernand Vaz. No type known.

Female. Top of head chestnut, neck and between shoulders grayish brown; rest of back and legs, mars brown; arms and belly blackish brown; hands, ankles and feet black; sides of head, hairs black banded with whitish; face and breast naked, black. No skin of male. Ex specimen Berlin Museum.

Measurements. Male. Skull: total length, 287; occipito-nasal length, 228.8; intertemporal width, 71.5; length of braincase, 101.6; Hensel, 187.2; zygomatic width, 170; median length of nasals, 46; length of rostrum, 96.2; width of rostrum at canines, 69.5; palatal length, 105.7; length of upper molar series, 65.8; length of mandible, 184.5; length of lower molar series, 74.5. Molar teeth very large. Ex specimen in Berlin Museum.

This is the only specimen of this form I have seen. Slack only exhibited a cast of the head when he conferred the above name, but nothing whatever is known of his type or what has become of it. It is not in the Collection of the Philadelphia Academy of Natural Sciences, and I could find no record that it had ever been there.

The two following specimens are in the Berlin Museum, but not yet characterized by Herr Matschie. The large gray Gorilla may represent an old individual in the pale pelage of *G. g. matschie,* or G. gorilla; but the wholly black example is possibly a distinct form, as it is the only specimen of that color known.

Gorilla gorilla ——— ?

Locality. Between the rivers Dume and Bumba near Mokbe, southern Cameroon near Congo boundry. Specimen in Berlin Museum.

Genl. Char. Size very large; color nearly all white. Skull very large, similar to that of *G. g. matschie* and about equal in size. An enormous crest, larger than that of *G. g. matschie* commences on forward part of the frontal a little behind the orbital ridge, rises directly upwards, not with a gradual slope as in *G. g. matschie,* and increasing in height as it proceeds, joins the broad flat expansion that encircles the occipital region. The braincase itself is comparatively small, being longer than *G. g. matschie* but narrower and less rounded. Orbital ridges very prominent and heavy, with a deep depression behind, at the farther side of which the crest takes its rise. The facial region is shorter than in *G. g. matschie* and more prominent, and the rostrum anteriorly is broader. The ascending ramus of the mandible is much wider, but the mandible itself is no longer. The broad bony expansion at rear of the skull overhangs the occipital region, and is not on the same plane which is a characteristic feature of the skull of *G. g. matschie.* Unfortunately the palatal region and pterygoid fossa are gone.

Color. Top of head and back of neck reddish, the hairs being blackish with red tips; sides of neck behind, the hairs tipped with yellowish; entire rest of back and legs to ankles, light gray; sides of face, chin and beneath lower jaw, arms from shoulders to wrist, belly, ankles, hands and feet, jet black; face and chest bare, black. Ex specimen Berlin Museum.

This is a very large Gorilla, remarkable for the light color upon the back and legs, and the enormous crest, and bony expansion at the occipital region of the skull. The specimen is that of a very old animal, as is proved by the condition of the teeth, which are greatly worn down; and the great development of the crest, and bony expansion at occiput, is another evidence of age. The light color of most of the pelage may also be attributed, at all events in some degree, to the age of the animal, as the pale gray hairs cover a greater expanse than in any other specimen of a Gorilla known. In color it differs from *G. g. matschie,* its probable nearest relative, in the pale gray legs, these being black in the other, and the differences in the skull have been already mentioned. It is however to be expected that many of the variations witnessed in all Gorilla skulls are purely individual, and have little or no real specific value, for like in human skulls, no two crania of these great Apes can be found exactly alike, and it is not unlikely when ample material has been obtained that we shall be obliged to modify considerably our present views as to the number of distinct forms of Gorilla that may exist.

GORILLA BERINGERI Matschie.

Gorilla beringeri Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1903, p. 257; 1904, p. 51; Rothsch., Proc. Zool. Soc. Lond., 1904, p. 418; 1906, p. 465.

Type locality. Kirunga, German East Africa. Type skull in Berlin Museum.

Geogr. Distr. Kirunga, Ya Sabinyo Vovcano, German East Africa.

Genl. Char. The face is not so broad as either that of *G. g. diehli* or *G. g. jacobi,* and is between these two in size and general characters. The orbital ridges are raised nearly to a level with the top of the braincase and the orbits are nearly round; two low frontal ridges run from outer side of orbits and meet probably near the fronto-parietal suture. I say probably, because the animal at some period of its life has been injured and the ridge on the left side is distorted and turned away from the true line; there is a low occipital crest, and the occipital outline forms an oblong shape not round as in *G. g. diehli.* The zygomatic width is moderate as in all Gorillas, the arch being nearly parallel with the braincase, not flaring outward. The angle of the occipital region is the same as in *G. g. diehli,* but the most striking character of the inferior surface of the skull is the extremely long bony palate which exceeds by 14 mm. either that of *G. g. diehli,* or even *G. gorilla,* and is only 6 mm. shorter than the much larger *G. g. jacobi.* The molar series are much larger than either of the forms compared. The skull indicates an animal of about the size of *G. g. diehli,* but with a much narrower head though of about the same length.

Color. Male. Nose and top of head to occiput black, hairs tipped with red, hairs being red at base then black and red tips; hairs on sides of head black banded with gray making this part much paler than top of head; shoulders, arms, hands, feet and under side of body black; hairs on hind neck are gray at base, then banded with red and tipped with black; a broad yellowish white band across back beneath the shoulders; rest of back, rump and legs, mixed gray black and reddish, the hairs of which are very long being gray for basal half then black with red tips; whiskers and beard black. Ex type Berlin Museum.

Female and Young. Entire pelage thick and long, jet black.

Measurements. Skull: total length, 320; occipito-nasal length, 256; Hensel, 196; zygomatic width, 164; intertemporal width, 74; extreme width of orbits, 108; height of orbit, 52; width of orbit, 40;

median length of nasals, 56; width of rostrum at canines, 77; length of braincase from orbital ridge to occiput, 172; greatest breadth of braincase, 100; palatal length, 116; length from palatal arch to occiput, (postpalatal length), 173; width of palate at pm^1, 41; length of upper molar series, 68; length of m^1. 17; width of m^1. 14.5; length of mandible, 181; length of lower molar series, 81. Ex type Berlin Museum.

This seems to be a mountain species dwelling at a high elevation, and possesses a coat capable of affording protection against cold. The hair is very long and thick, quite an unnecessary covering for an animal dwelling in a hot country. The white band on the back is much narrower and includes much less space than the similar coloring does in other species. Both the females and young are also clothed with long hairs, but in their case the coloring is a uniform black.

GORILLA GORILLA ——— ?

Locality. Mbiawe, in White Mountains, Lokundje River, South Cameroon. Type in Berlin Museum.

Color. Entirely black with hairs between shoulders with gray tips but rather indistinct; outer side of thighs brownish, whiskers short. Ex specimen Berlin Museum.

Measurements. Skull: total length, 295; occipito-nasal length, 110; intertemporal width, 68.5; length of braincase, 104.2; Hensel, 185; zygomatic width, 178; orbital width, 112; height of orbit, 53.2; length of rostrum, 112.3; width of rostrum at canines, 77.5; median length of nasals, 65.4; palatal length, about 114; broken length of upper molar series, 70; length of mandible, 166; length of lower molar series, 79.5. Ex specimen Berlin Museum.

This is not a very large Gorilla, but is remarkable for its nearly uniform black color, differing in this respect from the other races. The white tips to the hairs between the shoulders are not very distinct, and merely give a slight gray tint to the black hairs, and the brown thighs are also not very strong in color in contrast to the black. The specimen is an old male with the teeth much worn.

The skull has a long facial region and a long braincase, with a low crest on the occiput; the braincase is wide and rounded; and the lateral occipital bony expansion is not very wide and but slightly overhangs the occipital region. Zygomatic arches are not widely expanded and lie parallel to the skull. The teeth are very large, all the molars nearly uniform in size.

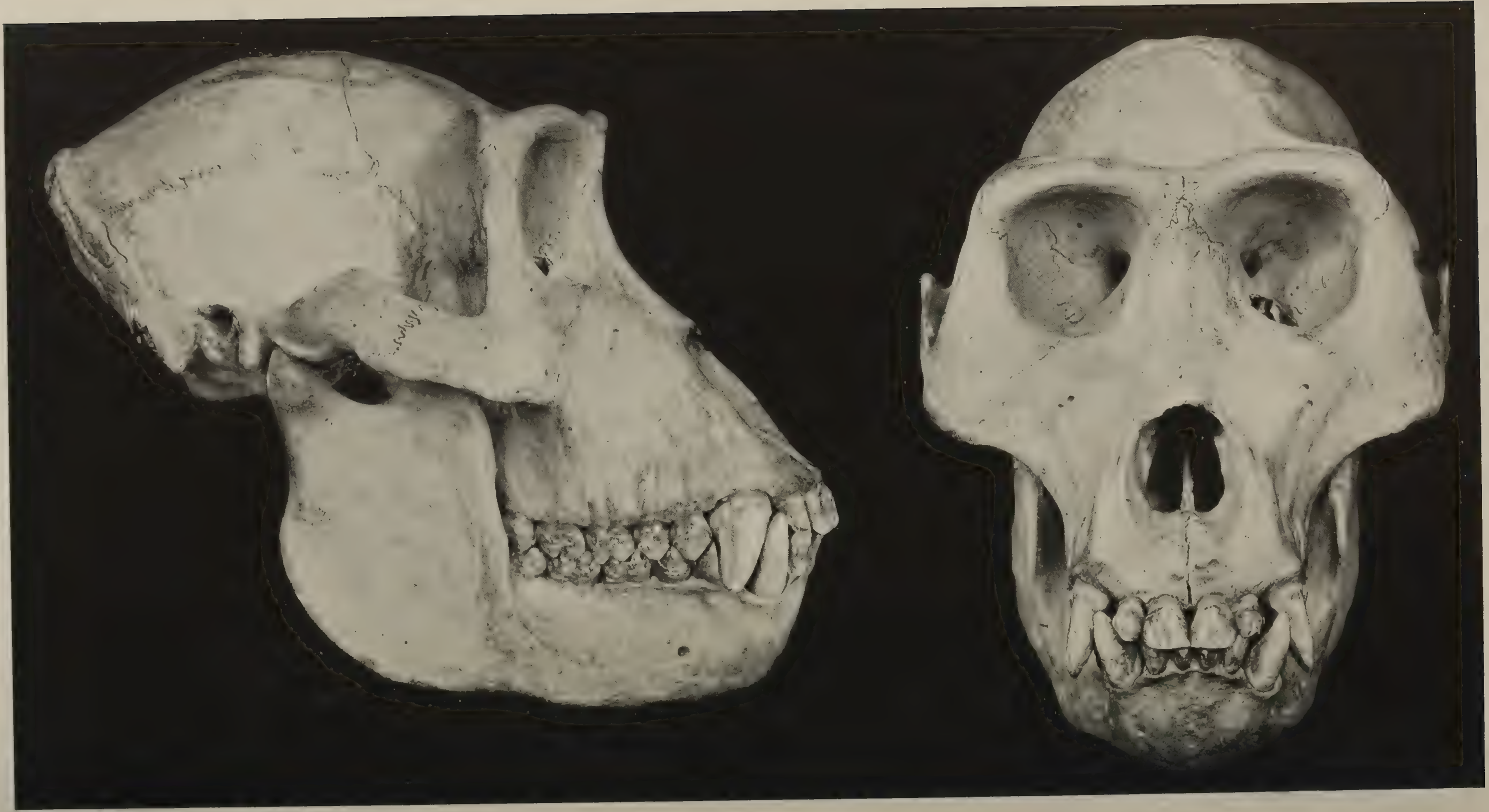
GENUS III. PSEUDOGORILLA.

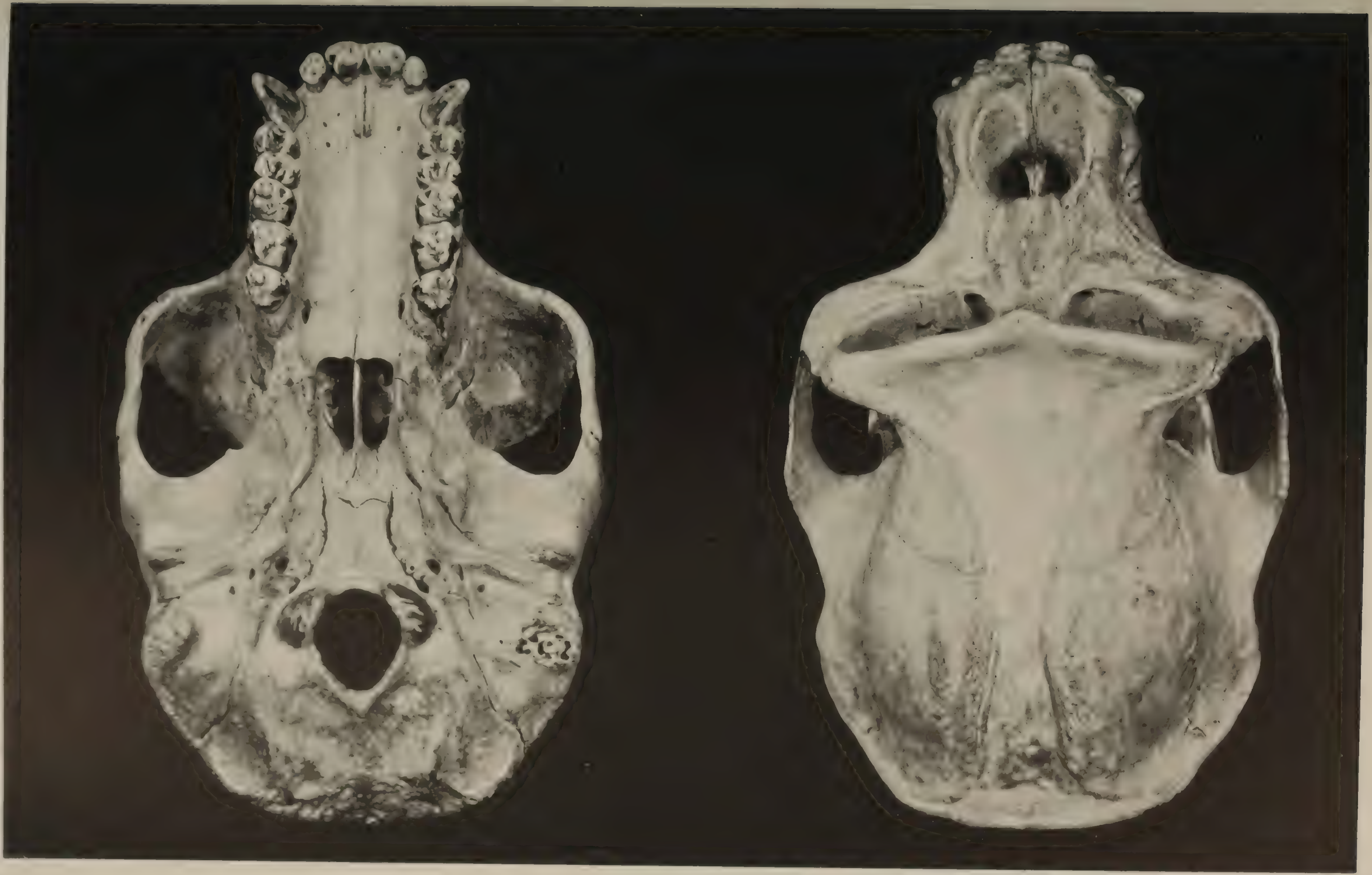
$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 32.$$

Size small but somewhat larger than the adult Chimpanzee. Braincase similar to the species of *Pan,* being large, full and rounded, sagittal and occipital crests wanting; forehead, prominent rising above orbital ridge; a rather broad flat expansion extending from occipital region to root of zygoma; facial region in profile having a slant of 45° from orbital ridge, rostral portion protuberant, narrow, lengthened; anterior portion of zygomatic arch at its root only reaches the anterior edge of posterior molar; lower horizontal line of mandible rounded, not straight.

The remarkable species of this genus exhibits affinities to both the Gorilla and Chimpanzees, possessing characters belonging to each. In size it is nearest the Chimpanzee but with a distribution of the hairy covering more like the Gorilla. The braincase with the prominent forehead and absence of crests is very like that of the Chimpanzee, but the rest of the cranium is Gorilla. The wide lateral and occipital flat expansion, shown in a most limited degree if at all in the Chimpanzee, the abrupt contraction of the lower facial region, very wide in the Chimpanzee, the lengthened narrow rostrum, like the Gorilla and contrasting strongly with the broad short rostrum of the species of Pan; the root of the zygomatic arch reaching only to the first molar as in the Chimpanzee; the narrow palatal floor, and the rounded lower horizontal line of the mandible like Gorilla and not straight as in Chimpanzee, all exhibit an animal which, while possessing characters found in one or other of its near relatives in Pongiidæ, has combined them in so extraordinary a manner as to entitle it to be separated from both and regarded as representing a distinct generic form connecting the other two genera. In its habits it has some of the attributes of the Chimpanzee, for the Collector who obtained the specimens now in the Senckenbergian Museum stated that it builds a nest in trees, and brought one back with him, in which the baby was when he obtained it. The skulls from which the descriptions and comparisons were made are those of the Senckenbergian Museum examples.

PLATE XXXII.



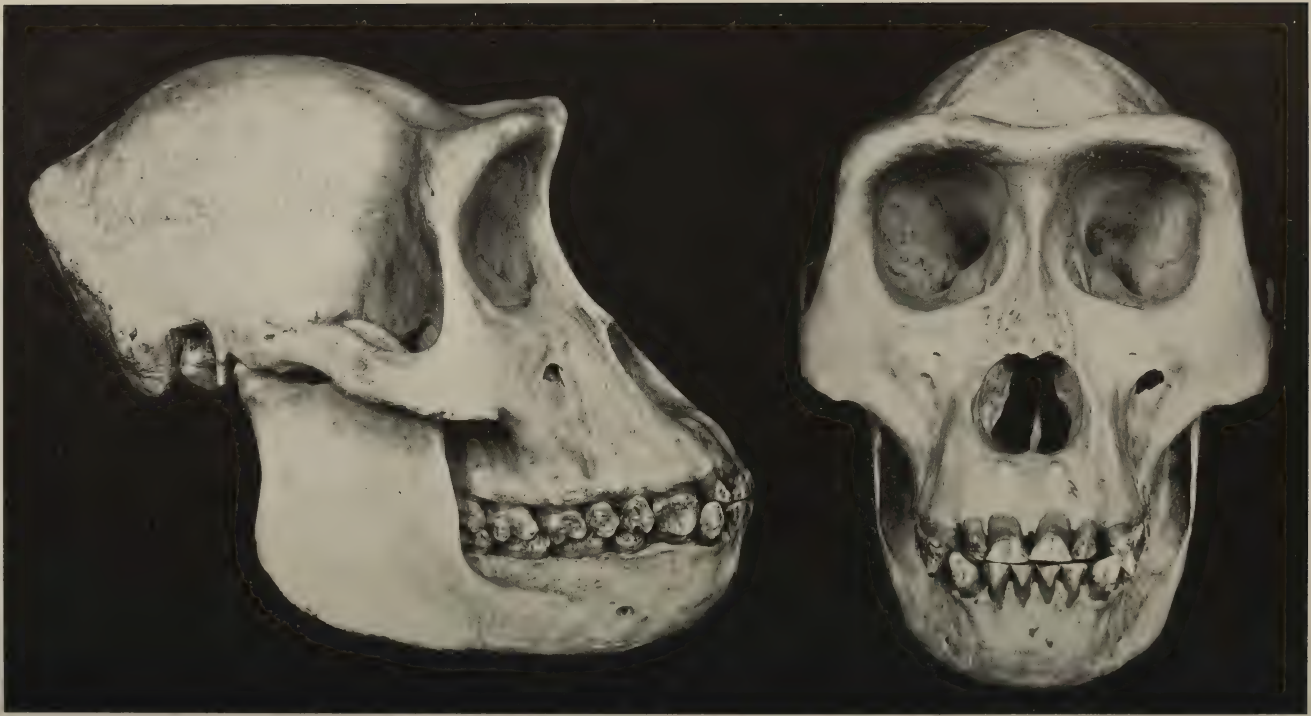


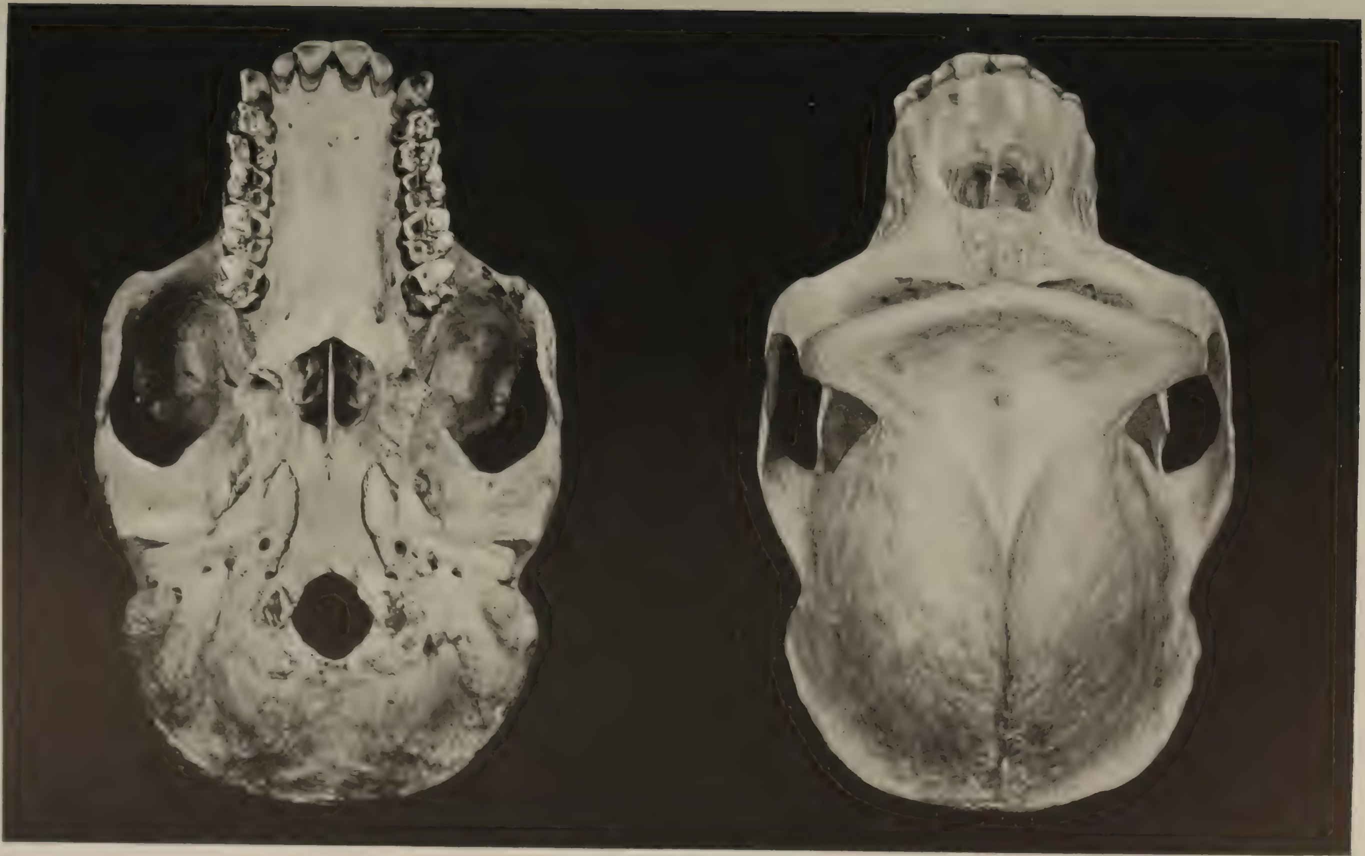
PSEUDOGORILLA MAYEMA, ♂

SIDE VIEW REVERSED.

No. ——? Senckenbergian Mus. Coll. Frankfort-am-Main. ½ Nat. Size.

PLATE XXXIII.





PSEUDOGORILLA MAYEMA, ♀

SIDE VIEW REVERSED.

No. ——— Senckenbergian Mus. Coll. Frankfort-am-Main. ½ Nat. Size.

PSEUDOGORILLA MAYEMA? Alix et Bouvier.

Gorilla mayema Alix et Bouv., Bull. Soc. Zool. France, 1877, p. 488; *Id.* Compt. Rend., LXXXV, p. 56; Rothsch., Proc. Zool. Soc. Lond., p. 415.

Type locality. Upper Congo. Locality of type unknown.

Color. Male. Line on back of orbital ridge buffy; line on sides of head in front of ears, cream buff; top of head, nape, hind neck to middle of back, dark reddish, darker than burnt umber; rest of back, flanks, and hinder parts of thighs iron gray; lower part of chest and abdomen, black; sides of head and limbs covered with black hairs tipped with whitish or cream buff; hands and feet black; face and upper part of chest naked, black.

Female. Line on back of orbital ridge and one in front of ears, buffy; top of head black tinged with reddish; back and thighs brownish; sides of head, arms, legs below knees black, hairs tipped with cream buff; lower part of chest and abdomen, black; hands and feet black; face and upper part of chest naked, black.

Measurements. Male. Height, 1,350; shoulders to wrist, 300; wrist to tip of middle finger, 230. Skull: total length, 220; occipito-nasal length, 194; intertemporal width, 73; width of braincase, 107; Hensel, 163; zygomatic width, 155; length of nasals, straight, not along the curve, 67.3; length of upper canine, 39.6; length of mandible, 153.5; length of lower tooth row, 79.5; extreme width of orbits, outside bony ridge, 124.7.

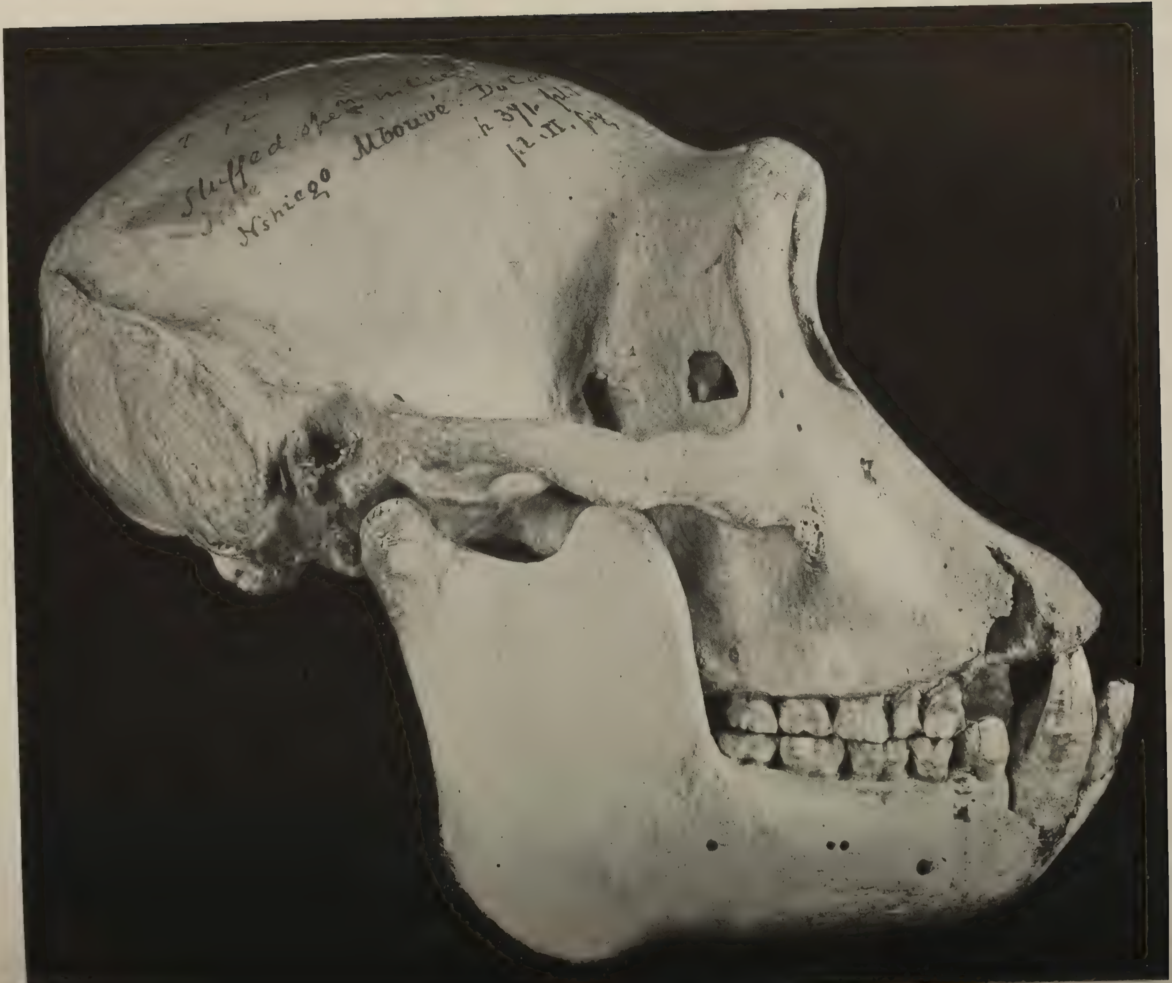
There are three specimens of this remarkable species in the Senckenbergian Museum at Frankfort-on-Main, an adult male, an old adult female and a baby, and they differ in size and color from all known species. They are the only examples I have seen and are not represented in any other Museum. The skeleton of the male and skull of the female are also in the collection. The teeth of the male have the cusps perfect, but those of the female are much worn; the braincase is broad and rather long, and no crest, but low ridges from outer side of orbits extend to the back of the skull; the lateral occipital expansion is very slight. Orbits large with a considerable depression behind the ridge; facial region short, and horizontal portion of mandible rather light; bony palate long and narrow.

As the group was in a glass case it was not easy to determine the shades of color, although the front was opened, reflections from the sides interfering somewhat.

In their description of G. MAYEMA Messrs. Alix and Bouvier state that one of the most remarkable peculiarities of the species consists in the back being covered with very long and thick hair, quite contrary to that seen in other Gorillas which have this part bare or sparsely covered with short, worn hairs. I cannot say that these Frankfort specimens have any such character, for the hair appeared to be no longer on the back than on other parts of the body. But I should hesitate to separate these examples on that account. I made inquiries in Paris for the type of Alix and Bouvier's species, but nothing was known of it or what had become of it. It is certainly not in the Paris Museum where one would most naturally look for it.

The examples in the Frankfort Museum were members of one family, and were procured at the same time and place. The nest, placed in the branches of the tree was also secured and the baby lies in it, probably in the same position in which it was discovered.

As there was no opportunity afforded for examining the unique type of G. MAYEMA, and as there are certain discrepancies in the type and the Frankfort examples, I cannot be absolutely certain that they are the same, and so have placed a ? mark after the specific name; for the genus has been founded upon the examples seen in Frankfort and not upon the description of Messrs. Alix and Bouvier. If eventually it is found that there is but one species, then the name at the head of this article will stand, but if it is proved that true *mayema* is a different species, the present form will have to take a new specific name.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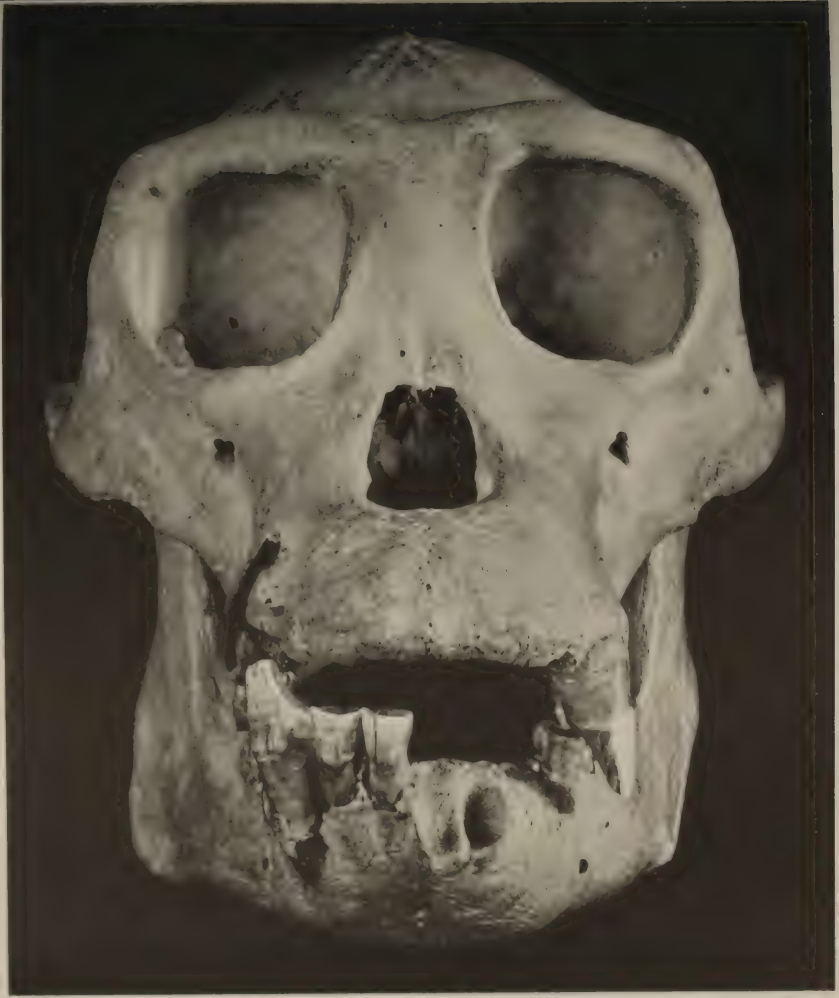
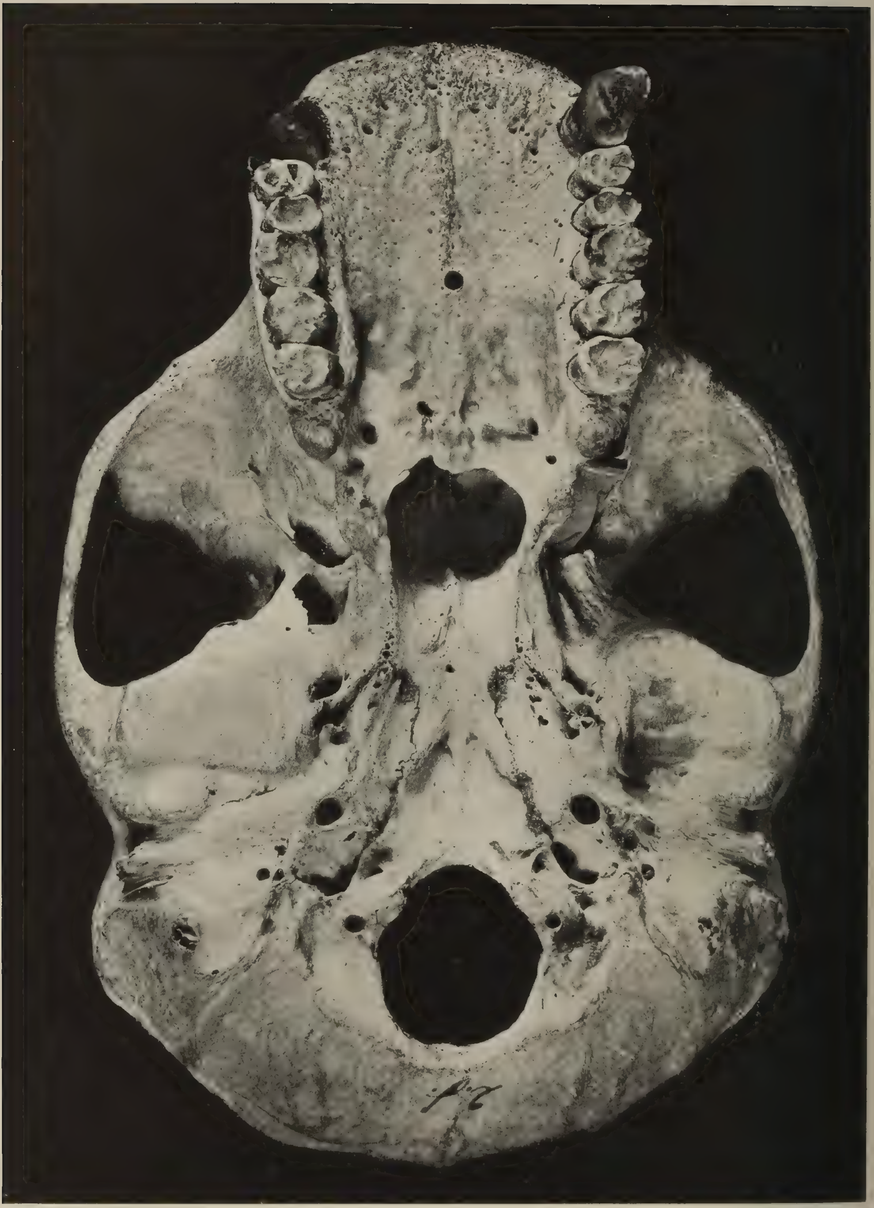
p. 371. pl.
pl. II. fig.



PAN CALVUS.

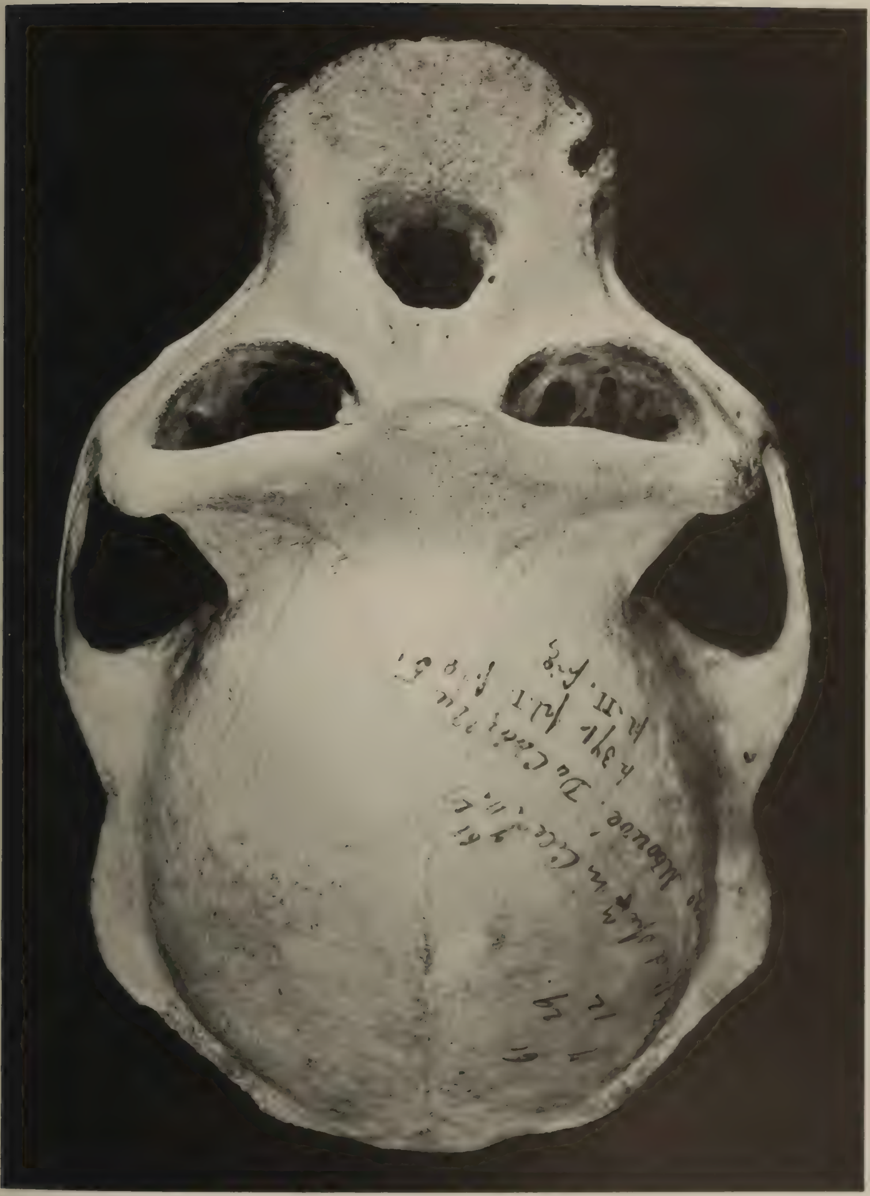
No. 61.7.29.12. Brit. Mus. Coll. 4/5 Nat. Size.



Pan Calvus.

No. 61.7.21.12. Brit. Mus. Coll. ⅘ Nat. Size.

PLATE XXXV.



PAN CALVUS.

No. 61.7.29.12. Brit. Mus. Coll. 4/5 Nat. Size.

GENUS IV. PAN.

I. $\frac{2-2}{2-2}$; C. $\frac{1-1}{1-1}$; P. $\frac{2-2}{2-2}$; M. $\frac{3-3}{3-3}=32$.

PAN Oken, Lehrb. Naturg., 3te Theil, Zool., 2te Abth., 1816, pp. XI, 1230. Type *Pan africanus* Oken = *Simia satyrus* Linnæus.

Troglodytes E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 87, (nec Vieill., 1806, Ornith.).

Mimetes Leach, Thomp. Ann. Philos., XVI, 1820, p. 104, (nec Hubn., 1816, nec Eschsch., 1818, Entom.).

Theranthropus Brookes, Cat. Anat. Zool. Mus., J. Brookes, Lond., 1828, p. 28.

Anthropopithecus Blainv., Ann. France et Étrang. d'Anat. et Physiol., Paris, II, 1839, p. 380.

Hylanthropus Glog., Hand. u. Hilfsb. Naturg., I, 1841, pp. XXVII, 34.

Pseudanthropus Reichenb., Vollständ. Naturg. Affen, 1862, pp. 191-194; Taf. XXXIV, XXXVII, figs. 493, 494; XXXVIII, fig. 501.

Engeco Haeckel, Gen. Morph. Organism., II, 1866, pp. CI, footnote, CLX.

Pongo Haeckel, Gen. Morph. Organism., II, 1866, p. CL, (nec Lacépède, 1799).

Body rather stout, heavy; legs long, foot shorter than the hand, the great toe thick, opposable; the other toes united by a web; arms long, reaching just below the knee; hands, broad, short; thumb short, four fingers united by a web; middle finger the longest; nose depressed in middle, flat at end; nostrils opening downward; lips mobile, protrusive; ear large. Skull elongate; no central crest; supraorbital ridges large; jaws protrude forward; canines long, conical, small diastema between them and premolar; anterior lower premolar pointed; molar teeth with four cusps except middle lower molar which has five. Humerus nearly equal in length to the radius.

It cannot be said that at the present time, a list of the species and races of Chimpanzees can be satisfactorily given. We really know so little about them; the color of the young, the changes that take place from youth to age, the hues of the face, hands, and feet, whether these are permanent from youth to the adult state, what, if any, are the distinctions in color between the sexes, (in some species we know there is no difference, but in others we are not so sure) ; what are the limits of the dispersion of those we gaily describe as distinct—do two or more species or races, call them what you will, dwell together in amity retaining their distinctive characteristics within limited areas; all these problems and more arise to greet us, and for the most of them we have no answer.

The material gathered in most Museums is so small and unsatisfactory, that it is of no avail in deciding the facts we all seek. The best, and so far as I have found, the only considerable collection of these animals extant to-day, is in the Berlin Museum, where about eighty skins and perhaps as many skulls have been brought together from different parts of Africa. But when we study these, we constantly meet with difficulties that not only perplex us, but prevent any satisfactory decision from being reached. It is easy enough to solve a difficulty by describing some troublesome specimens as new, and leaving the proof for some one else to discover, but that does not solve legitimate doubts, nor help overmuch to teach us the truth we desire to know.

In seeking for characters upon which specific differences may be founded we naturally first examine the crania, and at once we are confronted with a fact that prevails among all the great Apes, that individual variations exist to such an extent, that no one character can be depended upon, for no two skulls are alike, and they differ from each other in a manner equally great as is observed among human skulls. I have already commented upon this fact when discussing the specific values of specimens of the Gorilla and Ourang-utan, where in the latter I was compelled to decline to recognize more than one species after most careful investigation of a very large series of crania; and to recognize only with great doubt certain forms of Gorilla as possible species, not on any cranial character, but simply on the color of the fur which eventually may prove, as our knowledge of these animals increases, to be merely phases of pelage attributable solely to age. Certainly neither among Gorillas nor Ourang-utans can any specific difference be safely based upon cranial characters, and in this respect the Chimpanzees are no exception. At present, therefore, we rely mainly for our specific characters of these animals upon the texture, length and color of the hair; the presence or absence of beard; color of the face; sometimes of the hands and feet; seldom on the teeth, (for characters among these are rarely found), the extent in which the face is prognathous, and the presence or absence of a part in the hair on the head, or the existence of baldness, and its extent behind the ears. No doubt some of these are valid specific characters, and it is equally certain that there are several species of Chimpanzees, but it may also be regarded as a fact, that some of the characters above cited as specific are not valid, and that, with the material at present available no one can decide how many of the specimens described have an undoubted specific standing. That problem will be solved by our successors; at present we are groping in the dark so far as the number of existing species of the great Anthropoids are concerned.

Chimpanzees are purely African, that continent alone containing the known species. They are the most intelligent of all Apes, and can be taught without very great difficulty many things that men alone might be supposed able to learn. When young they are gentle and often exhibit much affection for those who have charge of them, but as they grow older, the males especially, often become savage and dangerous to approach. Their strength is extraordinary and a full grown Chimpanzee is more than a match for any man.

The brain of the Chimpanzee corresponds in all its physical details very closely to that of man. The fissures and convolutions are identical, even Broca's convolution, which is the seat of articulate speech, is also present. Why then if these Apes are provided with a brain so like that possessed by Man, do they not talk and accomplish many of those things which Man, the greatest of all Primates is able to achieve? The only explanation that seems reasonable is, that that indescribable, mysterious and powerful Influence which is called the Ego or Will, is lacking in the Ape, and the possession of which raises Man alone above all created beings and makes him the responsible creature that he is.

LITERATURE OF THE SPECIES.

1758. *Linnæus, Systema Naturæ.*
In this work Linnæus names a *black* tailless Ape, founded upon Tulp's figure and description, *Simia satyrus*, the Chimpanzee with a black face and pelage, and bald forehead, the animal generally known as *Troglodytes tschego* Auct.

1788 *Gmelin, Systema Naturæ.*
SIMIA SATYRUS Linn., renamed *Simia troglodytes.*

1796. *Schreber, Die Säugthiere.*
In this work on plate I B Tyson's Pigmy is figured as *Simia*

pygmæus, a Chimpanzee, but in the synonymy and text of *Pan* (*Simia*) *satyrus,* the Ourang and Chimpanzee are confounded together. The species is undeterminable.

1841. *Lesson, Prodromus Systema Mammmalia.*

Pan leucoprymnus first described as *Simia leucoprymna.*

1856. *Meyer, in Wiegmann's Archiv für Naturgeschichte.*

The Chimpanzee with region around eyes darker than the face, first described as *Simia chimpanse* = Pan chimpanse.

1860. *Du Chaillu, in Proceedings of the Boston Natural History Society.*

Pan calvus, and Pan kooloo-kamba first described under the genus *Troglodytes.*

1862. *J. E. Gray, in Proceedings of the Zoological Society of London.*

Pan vellerosus first described as *Troglodytes vellerosus.*

1862. *Reichenbach, Vollständigste Naturgeschichte der Affen.*

In this work the Author accepts all the forms named and described by various writers and places them under the genus *Pseudanthropus.* The species accepted are (P.) leucoprymnus, (*P.*) *tschego* = Pan satyrus (Linn.), (*P.*) calvus and (*P.*) kooloo-kamba.

1866. *Alix et Gratiolet, Nouvelles Archives du Muséum d'Histoire Naturelle, Paris.*

Pan aubryi first described as *Troglodytes aubryi.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*

In this list the Chimpanzees are placed in the genus *Mimetes,* with the following species: (*M.*) *troglodytes* = Pan satyrus Linn., var. a. P. calvus (Du Chaillu); var. b. P. kooloo-kamba (Du Chaillu); and var. c. P. vellerosus (Gray).

1872. *Giglioli, in Annali Museo Civico di Storia Naturale di Genova.*

Pan schweinfurthi first described as *Troglodytes schweinfurthi.*

1875. *Schaufuss, in Nunquam Otiosus, Zoologische Mittheilungen.*

Pan fuliginosus first described as *Pseudanthropus fuliginosus.*

1876. *Schlegel, Muséum des Pays-Bas, Simiæ.*

But one species of Chimpanzee is recognized in this work, Pan chimpanse as *Simia troglodytes.*

1887. *Noack, in Zoologische Jahrbücher.*

Pan s. marungensis first described as *Simia marungensis.*

1894. *Meyer, in Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden.*

Pan fuscus first described as *Anthropopithecus fuscus.*

1904. *Matschie, in Sitzungsberichte Gesellschaft Naturforschender Freunde, Berlin.*

In this paper the Author discusses very briefly the proper generic name for the Chimpanzees, and then gives a list of the species he considers recognizable. He demonstrates that Linnæus first described in the 10th edition of his Systema Naturæ a Chimpanzee under the name of *Simia satyra,* although the *Pan* (*Simia*) *satyra* of the 12th edition is an Ourang-utan. The species given are as follows: P. SATYRUS from Southern Cameroon, Gaboon, and Ogowé, with Gaboon as the type locality; P. CALVUS also with the same type locality, to Yaundi in south Cameroon; P. VELLEROSUS with Cameroon Mountain as type locality, (though Gray gives none), and its distribution in north Cameroon. P. SCHWEINFURTHI, with *Troglodytes* MARUNGENSIS Noack, as possibly synonymous, from Niam-niam and ranging south to Massouga on the Albert Nyanza. P. FUSCUS probably from the Gold Coast; P. LEUCOPRYMNUS, from coast of Guinea, probably Sierra Leone or western Liberia, and may be the same as *P. pygmæus* Tyson; and lastly P. CHIMPANSE from the Gambia region. The list is a tentative one, for the Author appreciates fully the great difficulty that exists in definitely discriminating the number of species that are known to represent this genus, and this uncertainty constrains him to write, when discussing (*S.*) CALVUS, "Die Farbung andert wie bei *S. satyrus* sehr ab; es ist mir unmöglich, die einzelnen Arten des Schimpanse nach der Färbung des Haarkleides zu unterscheiden." If the color of the hair is not of a specific value, and, as is certainly the case, that the skulls present few if any reliable characters for separating examples of Chimpanzees, little remains upon which species can be designated.

1904. *W. Rothschild, in Proceedings of the Zoological Society of London.*

A critical review of Herr Matschie's paper on the Chimpanzees and Ourangs. Five species and seven races are recognized as follows under the genus *Simia: S.* VELLEROSUS (Gray); *S. v.* FULIGINOSUS (Schaufuss); *S.* SATYRUS Linn.; *S. s.* SCHWEIN-

FURTHI (Giglioli); *S. s. marungensis* (Noack); *S.* KOOLOOKAMBA (Du Chaillu); *S.* AUBRYI (Alix et Gratiolet); *S.* PYGMÆUS (Schreber); *S. p.* FUSCUS (Meyer); *S. p.* LEUCOPRYMNUS (Lesson); *S. p.* CHIMPANSE (Matschie); and *S. p. raripilosus* Rothsch., = *S.* FULIGINOSUS (Schaufuss).

The arrangement of the species and subspecies is difficult to understand as it does not anywhere appear that intermediates of any of the recognized forms have been obtained, and the geographical distribution of some of these would seem to preclude one from being a race of the other, e. g. PAN SCHWEINFURTHI from the Soudan and Uganda, and PAN SATYRUS from Cameroon and Gaboon. They may exist, but I have never seen any connecting links between those forms. Then it does not seem advisable to consider P. FULIGINOSUS an entirely black Chimpanzee from the French Congo, as a race of P. VELLEROSUS, a brown Chimpanzee from Cameroon, especially as it is not known if their ranges approach each other at any point. A number of figures are given in the text of different Chimpanzees taken from life, which show the distribution of dark and light colors on the face, and enable the different species to be recognized, and keys are also supplied for distinguishing the various forms. It has yet to be proved, however, that two or more species of these Apes inhabit the same districts as this Author believes, for at present there is no material extant that enables this to be demonstrated. Thus far the material in the Berlin Museum, which is, without exception, the most extensive to be found anywhere, instead of assisting us to solve the problem of how many species exist, only makes it more difficult than ever, for the skulls present such endless variations, and the skins, by the diverse coloring of the fur, and the different hues and disposal of tints on the face, hands and feet, exhibited at times in examples from the same locality, that it is practically impossible to decide how many species really do exist, or if too many have not already been recognized. Herr Matschie has given much thought and study to this material, but was not by any means satisfied, at the time I examined these specimens with him, that the correct number of species had been demonstrated. Also which examples represent races, and which species, has by no means been ascertained.

The Author of this paper considers that *P. calvus* (Matschie), (nec Du Chaillu), is the same as P. VELLEROSUS (Gray); and

P. vellerosus (Matschie), (nec Gray), is a mixture of that species and P. AUBRYI, which is a natural sequence, for at that time Herr Matschie regarded P. VELLEROSUS and P. AUBRYI as the same. The Author has omitted P. CALVUS (Du Chaillu), both from his Key and Synopsis but makes it a synonym of P. SATYRUS (Linn.), see p. 430. He also regards *Gorilla* MAYEMA Alix et Bouvier, as a large Ape of the *P. vellerosus* type.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

It cannot be said that, at the present time, we know the limits of the range of any of the recognized species of Chimpanzee. Several of them are known to inhabit the same districts of the West African coasts, but exactly how they may be distributed in the localities they frequent has not been ascertained. Gaboon is supposed to contain five species, or species and races as different writers may regard them, and Cameroon has four, with possibly three more not yet described. Of these so far as known there are only two of the recognized species which do not inhabit both Cameroon and Gaboon, viz.: P. SATYRUS not found in Cameroon and P. VELLEROSUS not met with in Gaboon, leaving three found in both districts, and three as yet unrecognized specimens in the Berlin Museum, restricted, as supposed, to certain districts in Cameroon. If our determinations are correct, we have the singular fact that nearly all the recognized forms of Chimpanzees, like the Gorillas, are crowded together on a small portion of West Africa, leaving us to wonder how so many distinct forms, if they are such, could exist in so restricted a territory and preserve their specific characters intact.

Commencing on the West African coast at the most northern point where these Apes are known to dwell, we have P. CHIMPANSE from Gambia, and P. LEUCOPRYMNUS, said to have come originally from Guinea, but supposed to range from Sierra Leone to Liberia, but this distribution cannot be said to be satisfactorily authenticated. P. FUSCUS is stated to have come from the Gold Coast, but as there is no specimen of this form in any collection, its habitat is at best but obscure. In Cameroon is P. VELLEROSUS not as yet found elsewhere, and ranging from Cameroon into Gaboon are P. CALVUS, P. AUBRYI and P. KOOLOO-KAMBA. P. SATYRUS is apparently restricted to Gaboon, while P. FULIGINOSUS ranges from Gaboon into French Congo, but its limits are not known. From Basho, Dunne and Lomie, interior of Cameroon, are specimens in the Berlin Museum which appear to differ from the recognized forms. In East Africa, in the Niam-niam country, and from Albert Nyanza to Tanganyika on the west, going into the Congo forest but limits unknown are P. SCHWEINFURTHI and P. S. MARUNGENSIS.

KEY TO THE SPECIES AND SUBSPECIES.

- A. Pelage all black.
  - *a.* Hair moderately long.
    - *a.'* Forehead entirely bald to level of ears........*P. calvus.*
    - *b.'* Forehead partly bald ....*P. fuliginosus.*
    - *c.'* Forehead bald but not to level of ears........*P. satyrus.*
    - *d.'* Forehead mostly covered with hair.
      - *a."* Face black, ears large ....*P. kooloo-kamba.*
      - *b."* Face all flesh color ....*P. leucoprymnus.*
      - *c."* Region around eyes darker than face ....*P. chimpanse.*
  - *b.* Hair very long ....*P. schweinfurthi.*
- B. Pelage not all black.
  - *a.* Lower back grayish brown ....*P. s. marungensis.*
  - *b.* Lower back Prout's brown.....................*P. aubryi.*
- C. Pelage mostly brown in alults.
  - *a.* Forehead and top of head bald ....*P. vellerosus.*
  - *b.* Forehead not bald, hair on head springing from a central whorl ....*P. fuscus.*

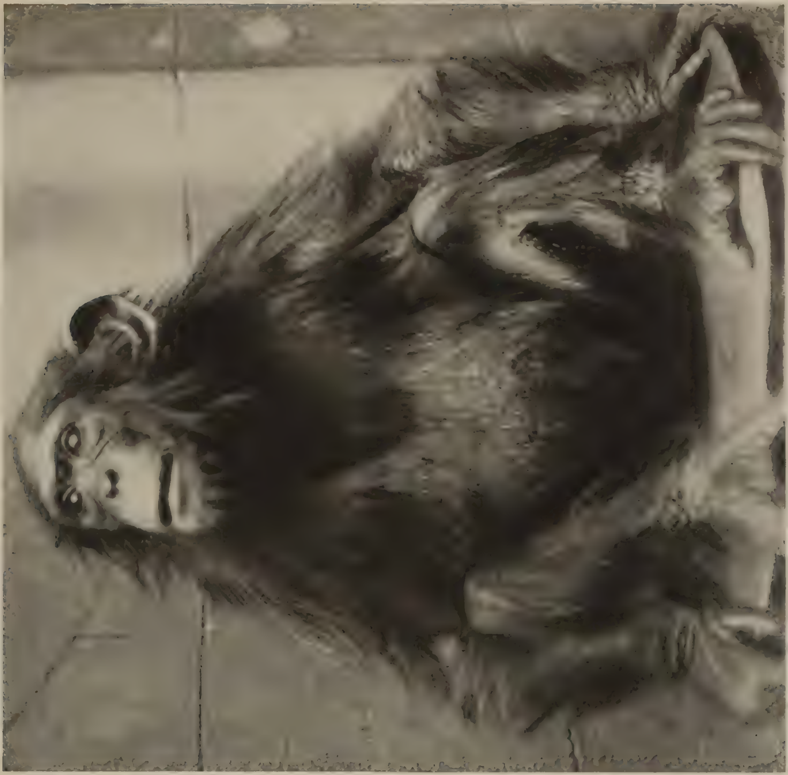
PAN CALVUS (Du Chaillu).

Troglodytes calvus Du Chaillu, Proc. Bost. Soc. Nat. Hist., VII, 1860, p. 296; *Id.* Equat. Afr., 1861, p. 407, pl.; Gray. Proc. Zool. Soc. Lond., 1861, p. 273; Bartl., Proc. Zool. Soc. Lond., 1885, p. 673, pl. XLI; Beddard, Proc. Zool. Soc. Lond., 1892, p. 118; *Id.* Trans. Zool. Soc. Lond., XIII, 1893, p. 177, pls. XX-XXVIII.

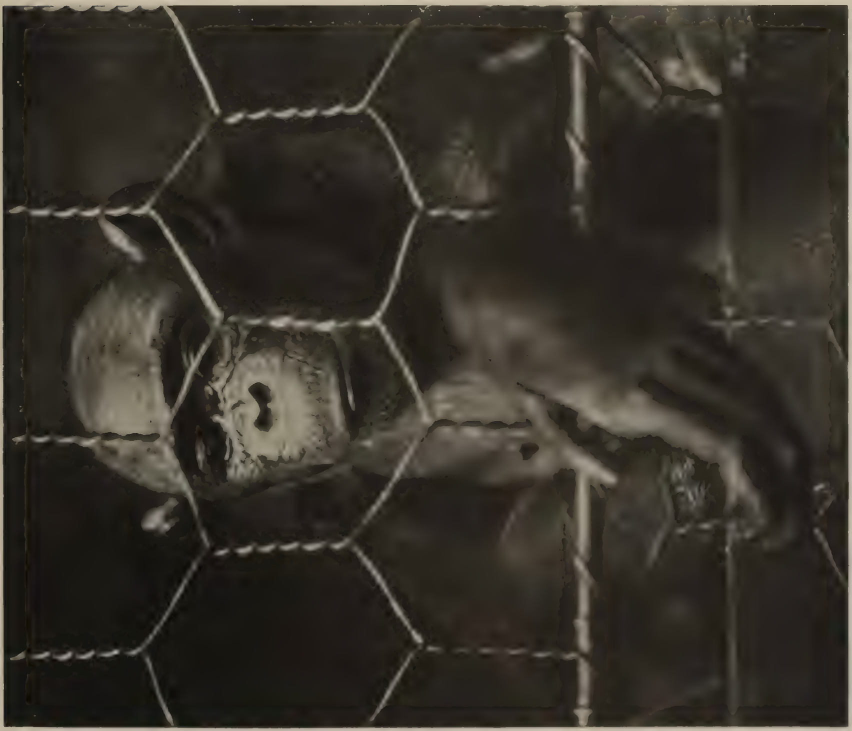
Pseudanthropus calvus Reichenb., Vollständ. Naturg. Affen, 1862, p. 194.

Mimetes troglodytes var. a. *calvus* Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 6.

Anthropithecus calvus Romanes, Proc. Zool. Soc. Lond., 1889, p. 316; Flower and Lydekk., Mamm. Liv. and Ext., 1891, p. 735; Forbes, Handb. Primates, II, 1894, p. 199, pl. XXIX.



PAN SCHWEINFURTHI.



PAN CALVUS.

Simia calvus Matschie, Sitzungsb. Ges. Naturf. Freunde, 1904, p. 60; Rothsch., Proc. Zool. Soc. Lond., 1904, p. 424.

BALD-HEADED CHIMPANZEE.

Type locality. Camma country, south of Cape Lopez, Gaboon.

Geogr. Distr. Yaundi Station, and Bifindi on the Lokundje, Cameroon, (G. Zenker); Kuilu, (Falkenstein); Ebol'woa, (Bulow); Gaboon and Southern Cameroon, West Africa.

Genl. Char. Head bald to the level of the middle of the ears behind; ears very large; beard thin, long, only on side of face; chin covered with white hairs; face brownish black.

Color. Female. Head and body except lower back, arms, hands and feet, black, lower back and legs pale brownish gray.

Measurements. Female. Head and body, 3 ft. 7 in.; arm, 29 in. *Male.* Height, 4 ft. 4 in. Skull: total length, 173; occipito-nasal length, 134; intertemporal width, 71; breadth of braincase, 98; Hensel, 120; zygomatic width, 122; breadth of rostrum at canines, 60; extreme breadth of bony orbits (outside), 101; palatal length, 66; length of upper molar series, 45.3; length of mandible, 124.5; length of lower molar series, 49.9. Ex type British Museum.

The skull of the type resembles that of P. KOOLOO-KAMBA in its long and broad braincase, but the anterior end of the rostrum is not so broad and stands out at a sharper angle to the face. The orbits seem higher on account of the orbital ridge being straighter, and without the depression in the center over the septum, and this last is not so wide. The zygomatic arches are not spread, but extend in a direct line, and are narrower posteriorly. The bony palate is narrowest posteriorly, widening as it goes, and is broadest between the canines. The braincase is rounded, very broad at the occipital region, and like P. KOOLOO-KAMBA is without a crest.

Du Chaillu says, "the natives of the Camma Country call the *T. niger* (*satyrus* Linn.), 'Nschiego,' and the *T. calvus* 'Nshiego Mbouve,' the latter meaning something like another tribe of the Nschiego. The Mpongwe called the *T. niger* 'Nschiego,' or the N'chego of Dr. Franquet. The T. CALVUS builds a shelter made with the branches of trees, elevated generally from twenty to thirty feet, they tie together with wild vines the branches they have collected, and there is below the shelter (which has the shape of an umbrella) a horizontal branch on which they rest; this horizontal branch is always the first from the ground. The male lives under one shelter, and the female under another on a neighboring tree."

He further states in his "Equatorial Africa" that "the nshiego mbouve (*Troglodytes calvus*) has a much narrower range than the Chimpanzee, and even than the Gorilla. I found it only in the table-lands of the interior and in the densest forests. I have reason to believe that it is found indifferently in the haunts of the Gorilla, in the farther interior, and do not know that the two species quarrel. It differs from the Gorilla in being smaller, milder, far more docile, less strong, and in the singular habit of building for itself a nest or shelter of leaves amid the higher branches of trees. I have watched, at different times, this Ape retiring to its rest at night, and have seen it climb up to its house and seat itself comfortably on the projecting branch, with its head in the dome of the roof, and its arm about the tree. * * * The distinctive marks of the T. CALVUS, those which prove it to be a distinct species, may be stated as follows: its head is bald and shining black; its temper is not fierce like gorilla's; its young is *white,* while the young gorilla is black, and the young Chimpanzee yellow. Its head is nearly round, and bullet formed, the nose is very flat; the ears larger than in the Gorilla, but smaller than in the Kooloo-Kamba and Chimpanzee; the eyes sunken, the teeth and canines small when compared with the Gorilla. The arms reach a little below the knee. The hands are long and slender; the foot shorter than the hand. The toes are free. The callosities on the back of the fingers show that this animal goes commonly on all fours, and rests its weight on the doubled up hands. The hair is of one uniform rusty black color. The male is larger than the female."

Although for some time and by various authors this species was regarded as not entitled to be considered different from the common Chimpanzee, S. SATYRUS, it is now recognized as a very distinct species. Besides the almost entirely bald head, the other features stated above under "General Characters," maintain its claim to a distinct rank. Besides the exterior characters, others have been found by the Anatomist which strengthen its claim as a distinct species, and while some may be due to individual variation, others have a more important significance. Thus the Simian fissure (*parieto-occipital fissure*) of the brain is connected with the median furrow by an irregular front fissure on one side only; and the posterior limb of the Sylvian fissure is much more upright than in the common Chimpanzee. The frontal lobes are not keeled below in the middle ventral line and the lateral masses of the cerebellum come together behind, overlapping and largely concealing the median tract.

*Other differences exist not only in the brain but also in the muscular system, quite sufficient to prove the distinctness of the present species from P. SATYRUS with which a comparison was made, even if the external characters had been lacking. The skulls of the two forms are different externally and internally; the face of that of P. CALVUS being more prognathous, and the outline in profile more concave, the interorbital region directed slightly backward; the cribriform plate has a crista galli; the petrous bone has a sharp edge making deeper the pits for the occipital lobes of the brain. The hinder part of the vomer is covered by the pterygoids; and the nasal bone in "Sally" skull was ridged in the middle line, but this may be an individual peculiarity, as two other skulls of this species did not possess it. Other differences exist, but sufficient have been mentioned to show that there exist quite enough to separate P. CALVUS from P. SATYRUS. A female of this species lived for over eight years in the Menagerie of the London Zoological Society in Regent's Park. The then Superintendent, the late Mr. A. D. Bartlett has given an interesting account of it in the Proceedings, (l. c.). She was quite young when received and Mr. Bartlett states that 'Sally' as she was called "had always shown a disposition to live upon animal food," being in this respect quite different from other species of *Simia*. "Soon after her arrival, I found she would kill and eat small birds seizing them by the neck, she would bite off the head and eat the bird—skin, feathers and all; for some months she killed and ate a small pigeon every night. After a time we supplied her with cooked mutton and beef tea; upon this food she has done well. I have never found any ordinary Chimpanzee that would eat any kind of flesh.

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*Beddard l.c.

"Another singular habit was the producing pellets or 'quids,' resembling the castings thrown up by Raptorial birds. They are composed of feathers and other indigestible substances, that had been taken with her food. Moreover she is an expert rat-catcher, and has caught and killed many rats that had entered her cage during the night. Her intelligence is far above that of the ordinary Chimpanzee. With but little trouble she can be taught to do many things that require the exercise of considerable thought and understanding; she recognizes those who have made her acquaintance, and pays marked attention to men of color, by uttering a cry of *bon, bun, bun*. She is never tired of romping and playing, and is generally in a good temper."

Professor Romanes in the same publication, (l. c.) narrates some interesting experiments he made with this animal, exhibiting her high intelligence. "This," he says, "is conspicuously displayed by the remarkable degree in which she is able to understand the meaning of spoken language—a degree which is fully equal to that presented by an infant a few months before emerging from infancy and therefore higher than that which is presented by any brute, as far at least as I have met with any evidence to show. Nevertheless, the only attempts she makes by way of vocal response are three peculiar grunting noises—one indicative of assent or affirmation, another, (very closely resembling the first) of dissent or negation, and the third (quite different from the other two) of thanks or recognition of favors. In disposition she is somewhat capricious, though on the whole good humored, fond of her keepers, and apparently never tired of a kind of bantering play which off and on they keep up with her continually. By vocalizing in a peculiar monotone (imitative of the beginning of her own 'song') they are usually able to excite her into the performance of a remarkable series of actions. First she shoots out her lips in the well known tubular forms (depicted in Darwin's 'Expression of the Emotions' 141), while at the same time she sings a strange howling note, interrupted at regular intervals; these, however, rapidly become shorter and shorter, winding up to a climax of shrieks and yells, sometimes accompanied with a drumming of the hind feet, and a vigorous shaking of the network which constitutes her cage. The whole performance ends with a few grunts.

"A year or two ago it occurred to me that I might try some psychological experiments on the intelligence of this animal. * * * Having enlisted the intelligent co-operation of the keepers, I requested them to ask the Ape repeatedly for one straw, two straws, or three straws. These she was to pick up and hand out from among the litter in her cage. No constant order was to be observed in making these requests, but whenever she handed a number not asked for her offer was to be refused, while, if she gave the proper number, her offer was to be accepted, and she was to receive a piece of fruit as payment. In this way the Ape was taught to associate these three numbers with their names. Lastly, if two straws or three straws were demanded, she was taught to hold one straw or two straws in her mouth until she had picked up the remaining straw, and then to hand the two straws or three straws together. This prevented any possible error arising from her interpretation of vocal tones—an error which might well have arisen if each straw had been asked for separately.

"As soon as the animal understood what was required, and had learned to associate these three numbers with their names, she never failed to give the number of straws asked for. Her education was then extended in a similar manner from three to four and from four to five straws. Here, for reasons presently stated, I allowed her education to terminate. But more recently one of the keepers has endeavored to advance her instruction as far as ten. The result, however, is what might have been anticipated. Although she very rarely makes any mistake in handing out one, two, three, four, or five straws, according to the number asked for, and although she is usually accurate in handing out as many as six or seven, when the numbers eight, nine or ten are named, the result becomes more and more uncertain, so as to be suggestive of guess work. It is evident, however, that she understands the words seven, eight, nine and ten to betoken numbers higher than those below them; and if she is asked for any of these numbers (i. e. above six), she always gives some number that is above six and not more than ten; but there is no such constant accuracy displayed in handing out the exact number named as is the case below six. On the whole, then, while there is no doubt that this animal can accurately compute any number of straws up to five, the accuracy of her computation becomes progressively diminished.

"It is to be noticed that the Ape exhibits some idea of multiplication; for she very frequently (especially when dealing with numbers above five) doubles over a long straw so as to make it present two ends, and thus to appear as two straws. Any of the comparatively rare errors which she now makes in dealing with numbers below six are almost invariably due to her thus endeavoring to duplicate her straws. In this connection it is to be remembered that, owing to the method above described (whereby the Ape is required to place each straw separately in her mouth until the sum asked for is completed), when any high number is demanded a considerable tax is imposed upon her patience; and as her movements are deliberate while her store of patience is small, it is evident to all observers that the doubling of the straws is intended to save trouble by getting the sum completed with greater rapidity than is possible when every straw is picked up separately. Of course we do not recognize these doubled straws as equivalent to two straws, and therefore the persistency with which she endeavors to palm them off as such is the more noteworthy as evidence of her idea of multiplication. Moreover, I am disposed to think that the uncertainty which attends her dealing with the numbers six and seven is more largely due to her losing patience than to her losing count; although after seven I believe that her computation of the numbers themselves becomes vague, or merged in a general idea of many. It may also be stated that while picking up straws and placing them in her mouth, she looks only at the straws themselves, and not at the person who asks for them; therefore she is certainly not actuated in her responses by interpreting facial expressions, unconscious gestures, etc., as is no doubt the case with many dogs, which, on this account, are sometimes accredited by their owners with powers of 'thought reading.' It is needless to add that, after asking for the number of straws required, we remain silent until the Ape has handed them out."

PAN FULIGINOSUS (Schaufuss).

Pseudanthropus fuliginosus Schauf., Nunquam Otiosus, Zoolog. Mittheilung., 1875, pp. 345-348.

Simia vellerosus fuliginosus Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 429-431; 1906, p. 467.

Simia pygmæus raripilosus Rothsch., Proc. Zool. Soc. Lond., II, 1904, p. 428, fig. 3.

Type locality. Coanga? French Congo. Type in Dresden Museum.

Geogr. Distr. French Congo region to Sette Camma, Gaboon, West Africa. Kiuliu River, specimen in Berlin Museum.

Genl. Char. Hair long and soft, black. Arms long, hands reaching to knee; ears large, high in head; forehead partly bald, no part in hair.

Color. Entirely black; face about nose black, pale around eyes, lips, and on cheeks. Ex type Dresden Museum.

Measurements. Height, 1,060; arm to end of fingers, 745. Skull: total length, 199.9; (type 169); occipito-nasal length, 144.7; (type 132.7); intertemporal width, 71; (type 73.4); breadth of braincase, 104.2; (type 110.4); length of braincase, 119.8; (type 114); Hensel, 131.3; (type 117.4); zygomatic width, 134.1; (type 114.3); median length of nasals, 31.7; (type 25.3); length of rostrum, 71.8; (type 58.7); width of rostrum at canines, 60.6; (type 51.2); palatal length, 60.6; (type 61.7); length of upper molar series, 44; (type 35.9); length of mandible, 142; (type 121.7); length of lower molar series, 48; (type 45).

Numbers in parentheses refer to the type in Dresden Museum, other numbers refer to the type of *raripilosus* in Tring Museum.

This is an entirely black Chimpanzee with very long arms, the hands reaching fully to the knee. The type is a female, the face is now clay color, end of nose black, but a colored cast made after death has cheeks, brow and lips around mouth flesh color. This is an immature animal, with the last molars in both jaws not having yet penetrated through the gum, but are still within the bone. The angle of the face is more than 45°, the rostrum projecting but slightly forward. The braincase is very broad posteriorly for its length. (*S.*) *raripilosus* Rothschild, from French Congo, the type of which was examined in the Tring Museum, is evidently the same as this species.

PAN SATYRUS (Linnæus).

Simia satyrus Linn., Syst. Nat., I, 1758, p. 25, (nec 1766, p. 24); Hoppius, Amœnit. Acad., 1763, p. 69, fig.; Matschie, Sitzungsb. Ges. Naturf. Freunde, 1904, p. 58; Rothsch., Proc. Zool. Soc. Lond., II, 1904, pp. 422, 425.

Simia troglodytes Gmel., Syst. Nat., I, 1788, p. 34, p. 26.

Troglodytes niger E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 87, (Part.); *Id.* Cours Hist. Nat. Mamm., 1828, p. 21, 7me Leçon; Less., Spec. Mamm., 1840, p. 37; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 54; Pousarg., Ann. Scien. Nat. Paris, 8th Ser., III, 1895, p. 137.

Troglodytes tschego Duvern., Archiv. Mus. Hist. Nat., Paris, VIII, 1855, p. 8; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 57; Du Chaillu, Proc. Bost. Soc. Nat. Hist., VII, 1861, p. 296.

Pseudanthropus tschego Reichenb., Vollständ. Naturg. Affen, 1862, p. 194, no fig.

Mimetes troglodytes Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 6.

Anthropopithecus satyrus Thos., Proc. Zool. Soc. Lond., 1911, p. 125.

Type locality. Gaboon, West Africa.

Geogr. Distr. Lower Guinea from Sanaga to the Ogowé; Semikaro in Esum-Land near the Sanaga in Cameroon. (Lieut. Schermemann); Yaundi and Bifundi in Cameroon, (Buchholz); Mayumba, (Hesselbarth); Tschintschosche on the Kuilu, (Falkenstein). (Matschie l. c.).

Genl. Char. Hair on head not parted in center; forehead in adults bald, but this does not extend to the level of the ears; ears medium in size, 65 x 50 mm., narrow beard on face except chin, which is only sparsely covered with short dark gray hairs. Arms very long exceeding 700 mm. Face in young yellowish, in adults blackish brown. Skull with very narrow facial portion, constricted behind the canines; braincase egg-shaped; ♂, 134 x 142; ♀, 122 x 130 mm.; last lower molar with four ill-defined tubercles; canines small.

In the Paris Museum is a specimen of a Chimpanzee marked *Troglodytes tschego* type. All the hair has gone from the head and left shoulder, and these parts have been covered by the taxidermist with a skin of COLOBUS VELLEROSUS, but the right shoulder and arm as well as the body possess their own natural hair. Of course the hair on the head is now long and there is a rather thick whisker, but this arrangement must cause a very different appearance from that which the animal presented in life. Tschego has always been regarded as an entirely black Ape, but this example while it is black on shoulder and arm and to the middle of the body, has the remaining portion, together with the legs a wood brown; the hands, feet, and face are black. Length of head and body 36 inches.

Measurements. Skull: total length, 190; occipito-nasal length, 149; intertemporal width, 72; width of braincase, 99; Hensel, 136.9; zygomatic width, 129; width of rostrum at canines, 58.8; palatal length, 67.9; length of upper canines, 27.4; length of upper molar series, 53.5; length of mandible, 150.3; length of lower molar series, 49.1. Ex type Paris Museum, of *T. tschego*.

PAN KOOLOO-KAMBA (Du Chaillu).

Troglodytes kooloo-kamba Du Chaillu, Proc. Nat. Hist. Soc. Bost., VII, 1860, p. 358; *Id.* Equat. Africa, 1861, p. 408; Gray, Proc. Zool. Soc. Lond., 1861, p. 273.

Troglodytes kooloo-kamba var. b. Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 7; Keith, Proc. Zool. Soc. Lond., 1899, p. 296.

Pseudanthropus kooloo-kamba Reichenb., Vollständ. Naturg. Affen, 1862, p. 194.

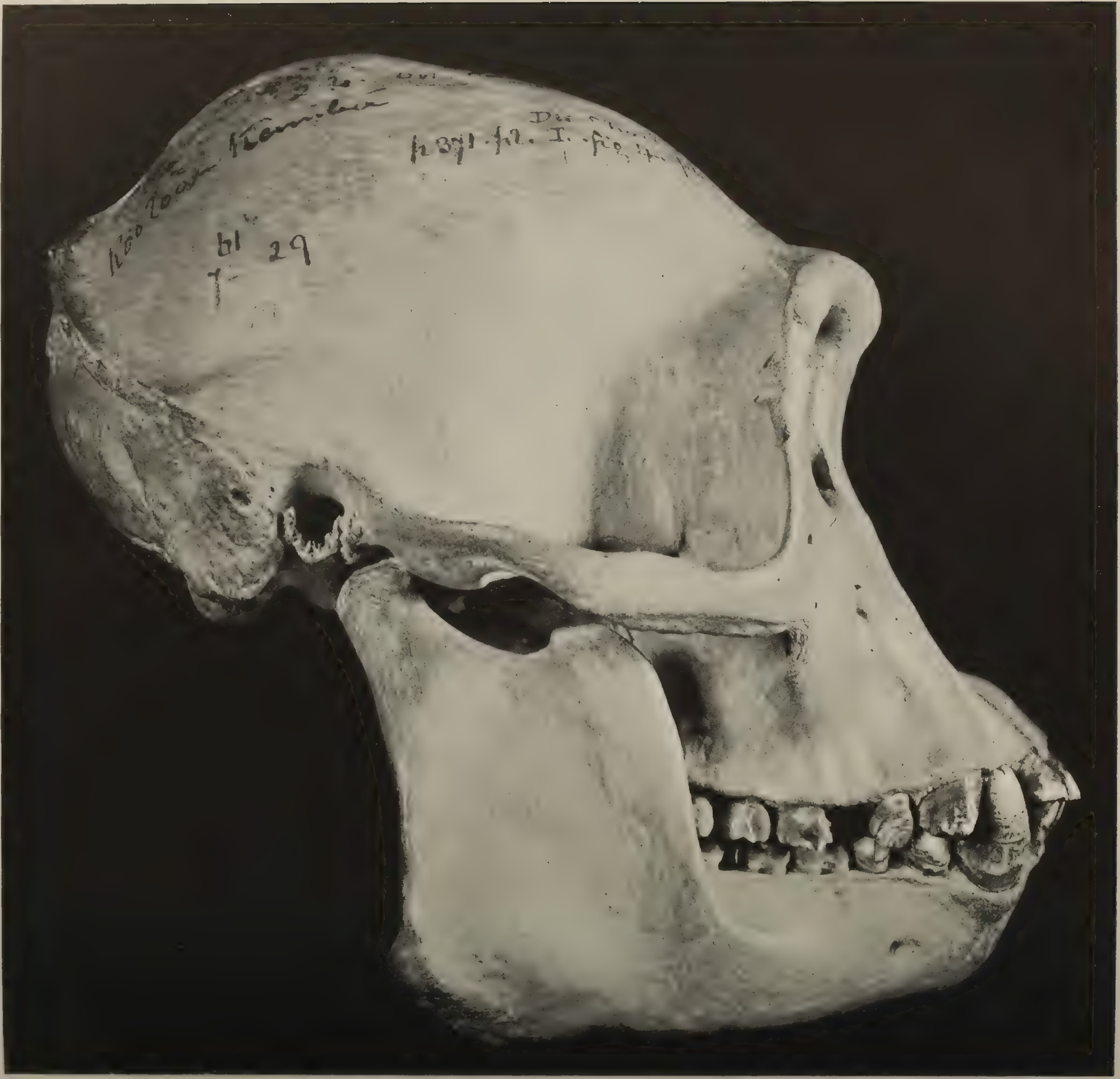
Anthropopithecus troglodytes kooloo-kamba Keith, Proc. Zool. Soc. Lond., 1899, pl. XX.

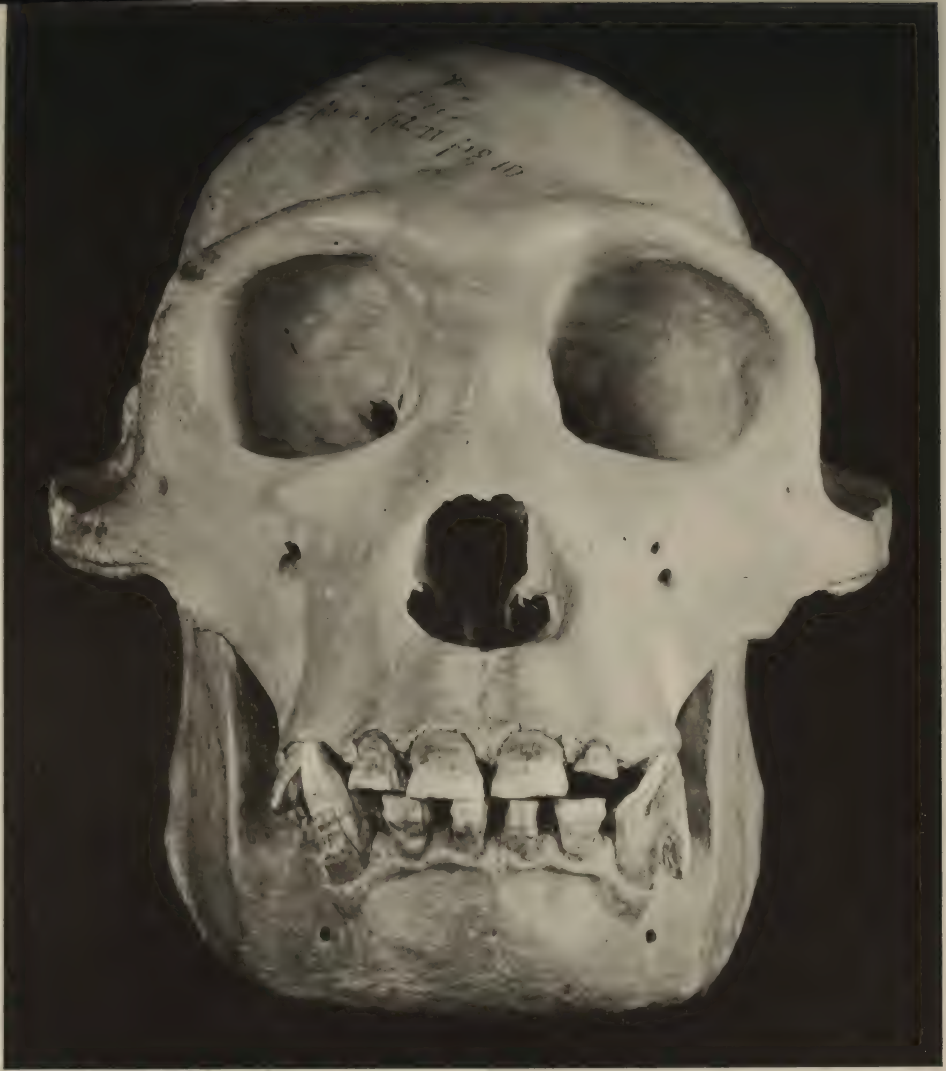
Simia kooloo-kamba Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 429, 430, fig. 115; Johnst., Proc. Zool. Soc. Lond., 1905, p. 71.

Simia satyrus (nec Linn.), Matschie, Sitzungsb. Ges. Naturf. Freund., Berl., 1904, p. 58. (Part.).

Type locality. Mountains at head waters of the Ovenga River, known to natives as Ashankolo. Type in British Museum.

Geogr. Distr. Interior of Ogowé.





PAN KOOLOO-KAMBA

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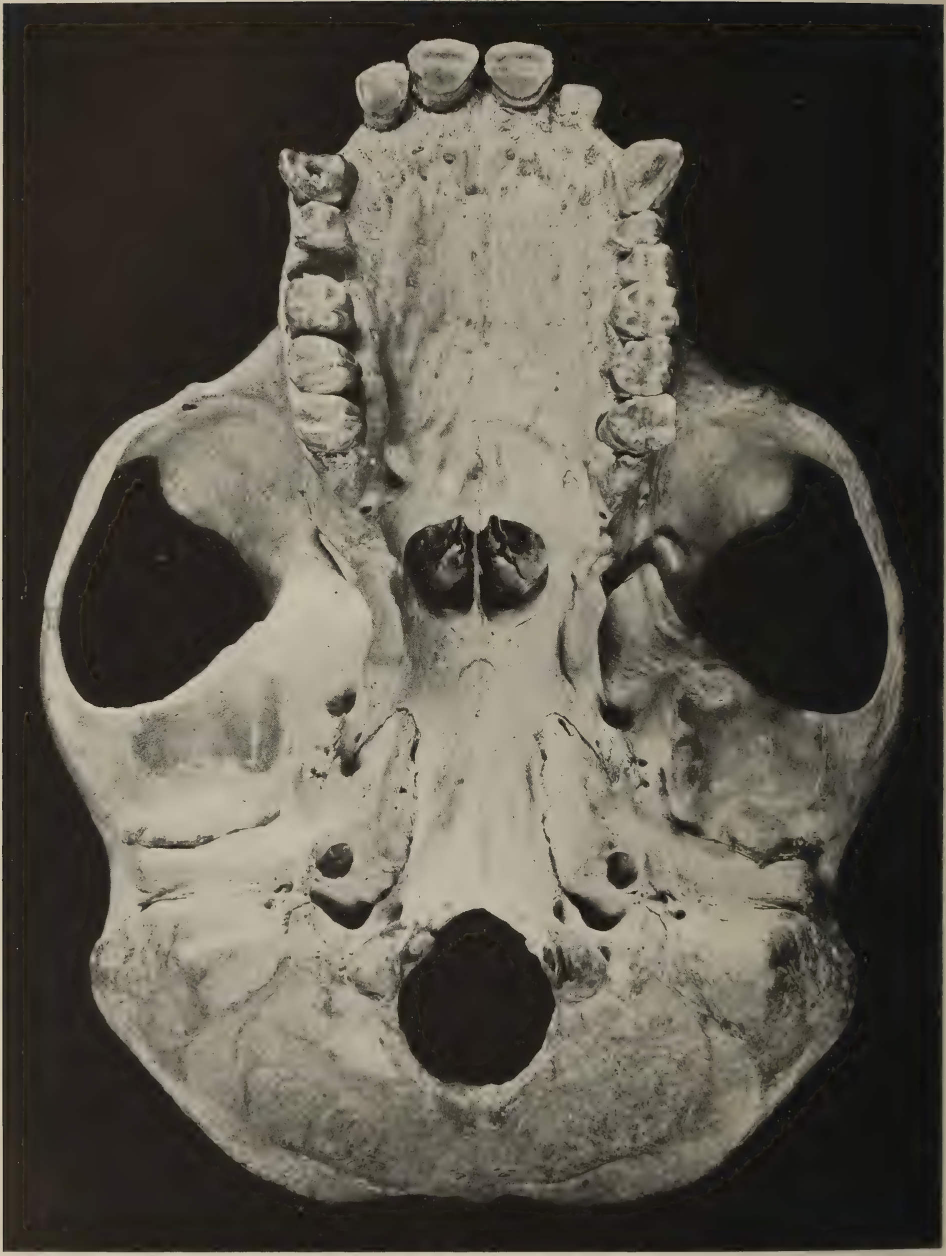
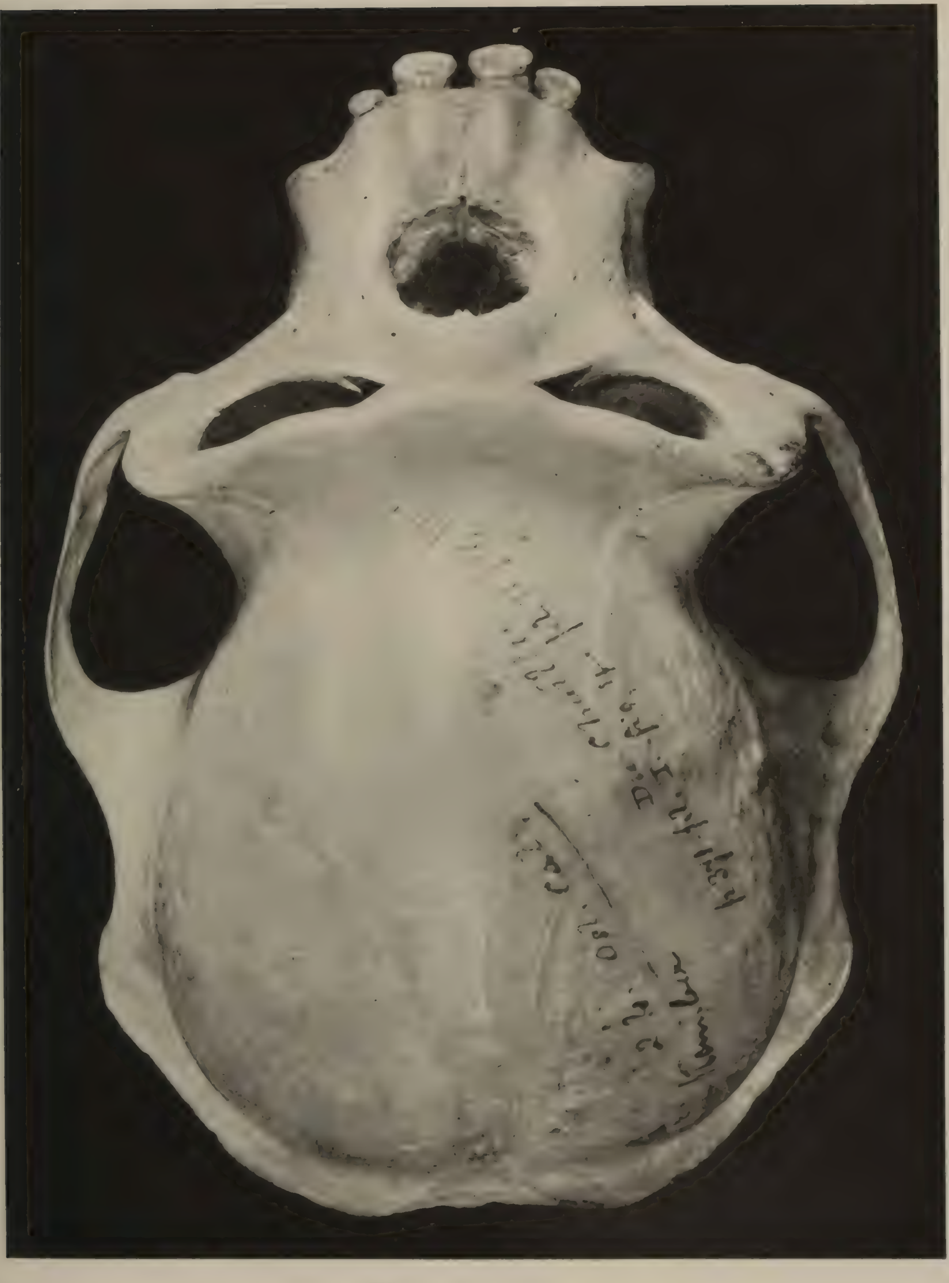


Pan kooloo-kamba.

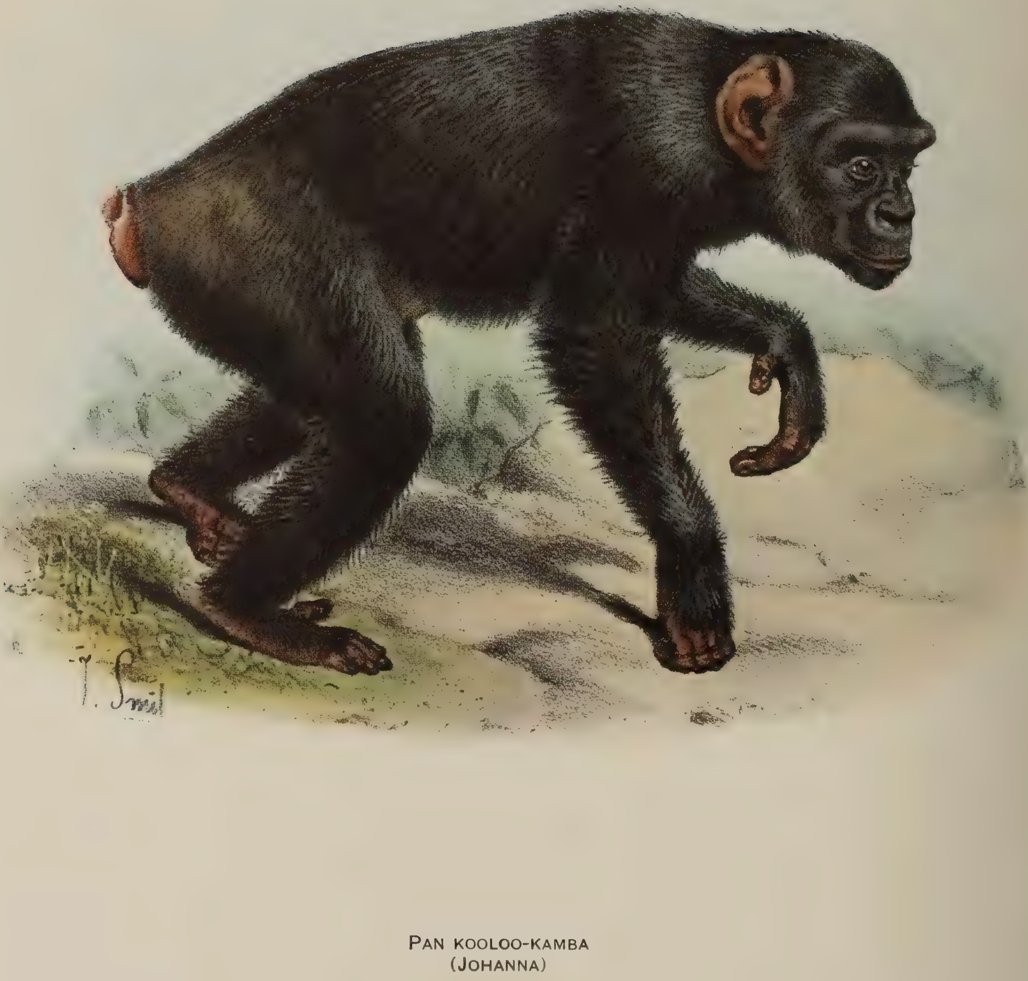
No. 61.7.29.10. Brit. Mus. Coll. ⅘ Nat. Size.

PLATE XXXVII.



PAN KOOLOO-KAMBA.

No. 61.7.29.10. Brit. Mus. Coll. ⅘ Nat. Size.



PAN KOOLOO-KAMBA
(JOHANNA)

Genl. Char. Hair, black, short and harsh; head round; ears very large; forehead bald; whiskers around face.

Color. All black.

Measurements. Total length, (dry skin), 4 ft. 2 in., hand, 11⅛ in., foot, 10⅜ in. (Du Chaillu). Skull: total length, 182; occipito-nasal length, 142; intertemporal width, 72; Hensel, 130.9; zygomatic width, 140; breadth of braincase, 106; width of rostrum at canines, 61.8; extreme breadth of orbits, (outside), 118.6; palatal length, 72.4; length of upper molar series, 40; length of mandible, 120; length of lower molar series, 47. Ex type British Museum.

The skull of the type is remarkable for the large size of the braincase and the short facial region, the latter being only a little over one half the length of the former. The rostrum is short and broad; the orbits are large and nearly round; the orbital ridge prominent, protruding forward in the center, and the nasals are very broad for their length. The zygomatic arches are flat and not widely spread, and the long palate is broad and of nearly equal width throughout the length. Canines rather short. Mandible is short; the ascending ramus very broad.

"The cry of the kooloo-kamba," says Du Chaillu, "is very different from that of the *T. calvus* and Chimpanzee, resembling the syllables 'Kooloo,' which I have heard, and from which it derived its name among the natives,—'Kamba' meaning 'to speak' among one tribe; other tribes give to the animal only the name of 'Kooloo.'

"This Ape was killed by me in the Ashankolo mountains. As I was returning to our camp, I heard the cry of 'Kooloo Kooloo,' and asked my guide what it was; he said it was a kind of 'man of the woods,' which I had not seen before called 'Kooloo-Kamba.' It was then too dark to go in search of the animal, but a little before daylight next morning we got up and went toward the place where the Ape had retired for the night. Daylight had nearly appeared, and I began to fear that the animal had left, when I was suddenly startled by the cry of 'Kooloo, Kooloo!' I looked above and saw the animal on the tree on which it had spent the night, and there killed it.

"It is very seldom this animal comes so near the coast, and as we brought it to the camp it was a great object of wonder to the men. It is said to live in the country much farther toward the mountains of the interior. The stomach contained nothing but vegetable food."

PAN LEUCOPRYMNUS (Lesson).

Anatomy of Pigmy Tyson, Phil. Trans., 1699, p. 338. Founded on Tyson's Anat. Pigmy, Lond., 1699, p. 338, undeterminable.

Simia leucoprymnus Less., Prodr. Syst. Mamm., 1841, pl. XII; *Id.* Illus. Zool., 1831, pl. XXXII, juv.

Simia troglodytes Owen, Trans. Zool. Soc. Lond., I, 1835, p. 343, pls. XLVIII-LVII, (nec Gmel.). Ex Sierra Leone.

Pseudanthropus leucoprymnus Reichenb., Vollständ. Naturg. Affen, 1862, p. 191.

Simia pygmæus leucoprymnus Rothsch., Proc. Zool. Soc. Lond., II, 1904, pp. 430, 431.

Simia leucoprymnus Matschie, Sitzungsb. Naturf. Freunde, 1904, p. 65.

Type locality. "Coast of Guinea." West Africa.

Geogr. Distr. Sierra Leone? Western Liberia? West Africa.

Genl. Char. Hairs on head sparse, parted in center; chin hairs brownish; ears large; region around eyes pale like face; beard around chin, short, thick.

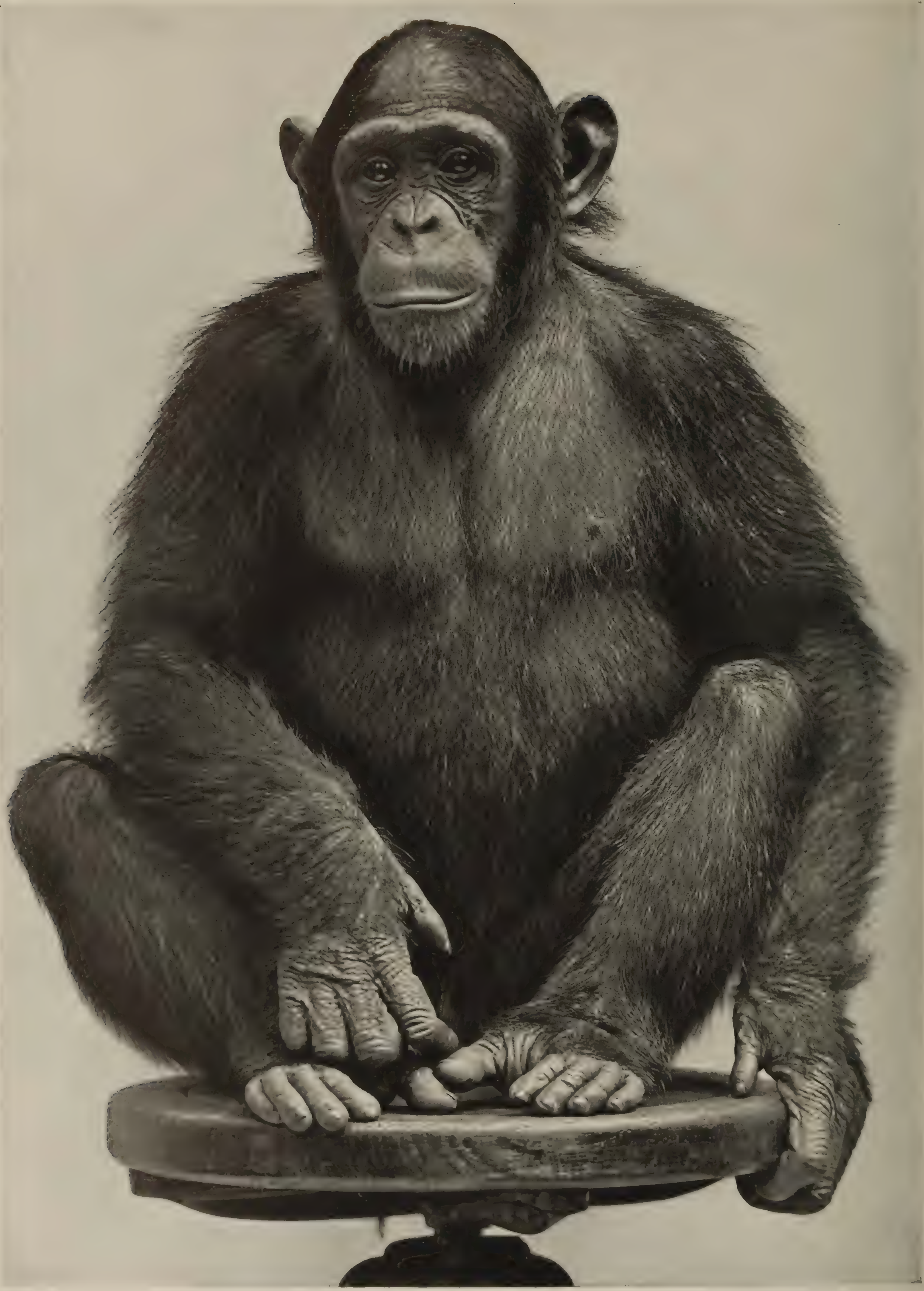
Color. Entire pelage black excepting a white patch on buttocks.

Measurements. "Height, 26 in.; width of ear, 2 in.; length of body, 14 in.; of arm, 14.6 in.; of legs, 12 in.; of hands, 3.8 in.; feet, 4 in." Less., (l. c.). Ex type.

The above measurements show that the type of this species was quite a young animal, probably not half grown. Its entirely pale face causes it to differ from P. CHIMPANSE, but it is impossible to determine what species it really represents, as the young of many species of Chimpanzees have white about the anal region, and the youth of the specimen figured by Lesson presents no characters to separate it from the young of other species. It may possibly be the young of P. CHIMPANSE.

The skeleton described by Owen (l. c.) having been obtained in Sierra Leone was probably an adult of this species. It does not appear that the skin was preserved. The skull is peculiar in that the braincase is posterior to the face and not above it. The form of the braincase is a rounded ovate, and the skull is narrow and elongate; quite a different shape from the usual skull of Chimpanzees.

The *Simia pygmæa* Schreber, founded upon Tyson's Pigmy is quite undeterminable. The figure has face, ears, hands and feet flesh color, no beard, and hair covering all the head and very short. Body



PAN CHIMPANSE.

and limbs grayish. There is no Chimpanzee known to me like this. Tyson states his specimen which he calls an Ourang Outang, was brought from Angola, but "taken up higher in the country." That may mean from the Congo State or French Congo, and the example might belong to one of several different species or races. Schreber gives no description, in fact *S. pygmæa* is not mentioned in the text, and it would seem quite useless to attempt to establish a species upon his faulty and unsatisfactory figure. Tyson says his Pigmy was black and his figure shows a black animal with white face, hands, feet and ears, and hair covering all the top of the head nearly to the eyebrows and parted in the middle.

PAN CHIMPANSE (Meyer).

Satyrus chimpanse Meyer, Archiv. Naturg., XXII, 1856, p. 282.

Simia chimpanse Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1900, pp. 77-85; 1904, p. 67.

Simia pygmæus chimpanse Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 429, 430, 433, fig. 114; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 579, fig. XCII.

Anthropopithecus troglodytes Flower and Lydekk., Anim. Liv. and Ext., 1891, p. 736, fig. 357.

Type locality. Gambia.

Geogr. Distr. Gambia, West Africa.

Genl. Char. Region around eyes darker than face; hair on head with a part in center; ears large; beard on sides of face only, long; chin covered with white hairs. Arms short; canines moderate; third upper molar the smallest.

Color. Uniform black, except white hairs on chin.

Measurements. I have not been able to find a skull of an adult of this species.

PAN SCHWEINFURTHI (Giglioli).

Troglodytes schweinfurthi Gigl., Ann. Mus. Civ. Genov., III, 1872, p. 135.

?*Anthropopithecus troglodytes* Thos., Proc. Zool. Soc. Lond., 1890, p. 444.

Simia schweinfurthi Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1904, p. 63.

Simia pygmæus Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 429, 430, 432, fig. 113, (nec Schreb.).

Simia satyrus schweinfurthi Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 426, 429, 430.

Type locality. Niam-niam country, Central Africa.

Geogr. Distr. Soudan, into German East Africa, and on the west shore of Lake Tanganyika in Congo Free State, (Matschie).

Genl. Char. Hair and beard very long; limbs long; head narrow and very high; face olive brown.

Skulls from the type locality of SCHWEINFURTHI compared with skulls of MARUNGENSIS exhibit no characters whatever to separate them. *Simia pygmæus* Rothschild with beard thick and long is not *S. pygmæus* Schreber which has a very short thin beard and is more like P. SCHWEINFURTHI. It would seem that (*S.*) *pygmæus* Rothsch., combines two forms *pygmæus* Schreber, figure, and SCHWEINFURTHI Giglioli.

Measurements. Skull: total length, 194; occipito-nasal length, 148.7; intertemporal width, 71.2; width of braincase, 115.6; length of braincase, 117.7; Hensel, 137.3; zygomatic width, 127.4; median length of nasals, 32.8; length of rostrum, 69; width of rostrum at canines, 56.8; palatal length, 74.1; length of upper molar series, 41. This skull in the Berlin Museum came from Buom, Niam-niam, brought by Schweinfurth from the typical locality.

This apparently very distinct species was discovered by Herr Schweinfurth in the country of the Niam-niam in Central Africa and described by Professor Giglioli (l. c.) who gives, from Schweinfurth, the following account of this Ape: "It was getting well onwards towards night, and by the red glare of the pitch-torch which is the invariable resource of lighting the Niam-niam huts, I was getting my supper, in the simplicity of the primitive times of creation, off sweetened plantains and tapioca, when I was interrupted by a visit from some of the natives who lived close at hand. They had come to dispose of a collection of the skulls of the Chimpanzee, and I effected the purchase by means of some large copper rings. The people told me of the abundance of these creatures in the adjacent woods, and related a number of the adventures that had befallen them in their arduous attempts to capture them; they promised, moreover, to bring me some further contributions for my collection, but unfortunately I could not wait to receive them; we could not prolong our stay because of the scarcity of provisions, and we had to start betimes on the following morning. Altogether I made an addition of about a dozen skulls to what I had previously secured, but many interesting fragments I much regretted being obliged to leave behind, having no alternative on account of my limited means of transport.

"It was not my good fortune to witness a Chimpanzee hunt. This is always an arduous undertaking, involving many difficulties. According to the statements of the Nyam-nyam themselves the chase requires a party of twenty or thirty resolute hunters, who have to ascend the trees, which are some eighty feet high, and to clamber after the agile and crafty brutes until they can drive them into the snares prepared beforehand. Once entangled in a net, the beasts are without much further difficulty killed by means of spears. However, in some cases they will defend themselves savagely and with all the fury of despair. Driven by the hunters into a corner, they were said to wrest the lances from the men's hands and to make good use of them against the adversary. Nothing was to be more dreaded than to be bitten by their tremendous fangs, or getting into the grasp of their powerful arms. Just as in the woods of the west, all manner of stories were rife as to how they had carried off young girls, and how they defended their plunder, and how they constructed wonderful nests upon the topmost boughs of the trees—all these tales, of course, being but the purest fabrications.

"Among the Nyam-nyams the Chimpanzee is called 'Rana' or 'Manjarooma,' in the Arabic of the Soudan where long ago its existence seems to have been known it was included in the general name of 'Baahm.' The life that the Rana leads is very much like what is led by the Ourang-utan in Borneo and is spent almost entirely in the trees, the woods on the river banks being the chief resort of the animals. But in the populous Manbuttoo country, where the woodlands have been thinned to permit the extensive cultivation of plantains, the Chimpanzees exhibit great fear of man, and pass their existence in comparative solitariness. Like the Gorillas, they are not found in herds, but either in pairs or even quite alone, and it is only the young which occasionally may be seen in groups."

That they carry away young girls is most likely a fictitious tale, but that they build nests in the trees like some of their relatives in West Africa is by no means improbable. Matschie (l. c.) gives the following localities for this species: Uelle Makua, Nyam-nyam, (Schweinfurth); Manda, on the west shore of Lake Tanganyika, (Reichard and Bohm); Manyema, west of Lake Tanganyika (Major Dr. von Wissmann); Ruanda, (Hauptmann Langheld); Akangaru-Quelle east of the Russissi, between the boundaries of Urimdi and

Ruanda, (Lieutenant Pfeiffer); Kirassa-Berg northerly from Ujiji on Tanganyika, (Lieutenant Gudovius); and Misougua on the south shore of Lake Albert-Nyanza, (Emin Pascha in British Museum).

PAN SCHWEINFURTHI MARUNGENSIS (Noack).

Troglodytes niger var. *marungensis* Noack, Zool. Jahrb., 1887, p. 291, pl. X.

Type locality. Manda Marungu, west of Lake Tanganyika. Skull of type in Berlin Museum.

Geogr. Distr. Belgian Congo, Africa.

Genl. Char. Hair long, harsh, black; zygomatic arch strongly developed. Face black.

Color. Pelage jet black, everywhere except on the back in adults where it is grayish brown; hairs on back of neck and between shoulders tipped with white.

Measurements. Height, 1,290; arms, 830. Skull: total length, 195; occipito-nasal length, 149.5; intertemporal width, 70.5; length of braincase, 117.8; width of braincase, 102.9; Hensel, 137; zygomatic width, 133.7; median length of nasals, 32.2; length of rostrum, 71.4; width of rostrum at canines, 60.3; palatal length, 79; length of upper molar series, 44; length of mandible, 124.6; length of lower molar series, 50.9. Ex specimen Berlin Museum from Bugozewald.

The type skull of this species, there was no skin, is in the Berlin Museum. It belonged to a very young animal and only the braincase remains, the entire facial region is wanting. It is practically of no value whatever for the identification of the species, and the above description, therefore, is taken from an old male from Bugozeri forest north east of Lake Kivu, German East Africa. There are several specimens of adult and young in the Berlin Museum.

In some respects, such as the long, loose hair of the head and body and the long ample whiskers on the sides of the face, this form resembles somewhat PAN SCHWEINFURTHI, but the face is black or brownish black and in this respect differs considerably from the pale face of its relative. Their ranges may possibly approach near to each other on the border of the Congo Free State, but the present form has a more western dispersion, and we do not altogether know the extent of its range in the Congo State. But Matschie says that P. SCHWEINFURTHI has been found by Reichard and Bohm at Manda on the west shore of Lake Tanganyika and also by Major Dr. von Wissmann at Manyema west of the same lake, so it goes into the Congo Free State, but how far it may penetrate is not yet known.

PAN AUBRYI (Gratiolet et Alix).

Troglodytes aubryi Grat. et Alix, Nouv. Archiv. Mus. Hist. Nat., Paris, II, 1866, p. 1, pls. I, IX; Keith, Proc. Zool. Soc. Lond., 1899, p. 296.

Simia vellerosus Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1904, p. 64, (Part. nec Gray).

Simia aubryi Rothsch., Proc. Zool. Soc. Lond., 1904, pp. 429, 430.

Type locality. Gaboon.

Geogr. Distr. Cameroon and Gaboon, West Africa.

Genl. Char. "Hair black and short; ears very small; last lower molar with five large tubercles as in GORILLA; eyes very wide apart." Face adult, black.

Color. Top of head bistre; back of head black, hairs with bistre tips; whiskers bistre; shoulders, arms, hands, chest, belly, and upper part of back, black; lower back and rump, legs and feet Prout's brown, becoming grayish brown on thighs. Ex specimen Berlin Museum.

Young. Black.

Measurements. Height, 1,090; arms, 690, (skin). Skull: total length, 210; (185); occipito-nasal length, 147.6; (142); intertemporal width, 71.2; (72); length of braincase, 103; (114); width of braincase, 94.4; (106); Hensel, 136.5; (120.9); zygomatic width, 127.2; (broken); median length of nasals, 21.5; length of rostrum, 77; width of rostrum at canines, 64.3; (58.8); palatal length, 86.9; length of upper molar series, 46.6; (46); length of mandible, 141.6; (126.7); length of lower molar series, 53.1; (51.3). Ex specimen Berlin Museum. (Ex plaster cast in parentheses).

I have not been able to find the type of this species. A plaster cast of the skull is in the Paris Museum, and some dimensions of the latter are given above. The original skull is said to be in the Academy of Sciences. The description of the color of the fur is taken from an example in the Berlin Museum.

The plaster bust is life size, and is that of an adult animal. It is colored evidently from nature, and has on the back cut into the plaster "Troglodytes aubreyi, Janvier 1864, Stahl." The eyes of the figure are closed, and I was informed it was a cast taken after death. The coloring appears to have been done with much care. The ears are placed high on the head, and with the face are flesh color; the end of the nose, however, about the nostrils is black. The head, and the body below the nipples, and arms below the shoulders, are black. The entire face is heavily wrinkled.

Aubry's Chimpanzee appears to be nearest P. KOOLOO-KAMBA, but can be distinguished by its smaller ears. Few examples of either of these Apes have been obtained, and their exact relationship cannot be said to be, as yet, satisfactorily determined.

PAN VELLEROSUS (Gray).

Troglodytes vellerosus Gray, Proc. Zool. Soc. Lond., 1862, p. 181.

Simia vellerosus Matschie, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1904, p. 62; 1906, p. 467; Rothsch., Proc. Zool. Soc. Lond., II, 1904, pp. 429, 430, pl. XXIV, fig., skull, figs. 108, 109, 2.

Mimetes troglodytes var. C. Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 7.

Type locality. Cameroon Mountains? West Africa. No locality given for type in British Museum.

Geogr. Distr. Cameroon. Kameroon-Berg, between Soppo and Buenga, (Prof. Dr. P. Preuss); Johann Albrechtshohe on the Elephant Sea in the region of the Upper Mungo, (Gov. von Pullkammer); Ndekoa on the Wakome, on the right side of the adjacent river Munaya at the junction of the Cross River, near the north boundary of Cameroon, (Diehl); Victoria, (Schulz); (Matschie, l. c.) West Africa.

Genl. Char. Hair long and soft, generally yellowish gray in old adults; face brown; last lower molar very small; facial portion of skull very short, canines very large. No hair on frontal ridge or face; whiskers on sides of head and beneath chin.

Color. Top of head, space between shoulders and back, broccoli brown; whiskers tipped with broccoli brown; rest of pelage everywhere black; face and hands black. No skull. Ex type British Museum.

Measurements Skull: total length, 255; occipito-nasal length, 163; width of braincase, 98.1; Hensel, 134.2; zygomatic width, 137; median length of nasals, 30.9; palatal length, 68.3; length of upper canines, 29.5; length of upper molar series, *36.6; length of mandible, 148.4; length of lower molar series, 50.5. Ex specimen Tring Museum.

The type of this species is a Chimpanzee with a coat that is in process of change, the hairs on top of head and back turning apparently from black to brown. This fact would seem to remove it from the group of Chimpanzees which are black throughout their lives, never changing the color of their coats. The hair of the type is long

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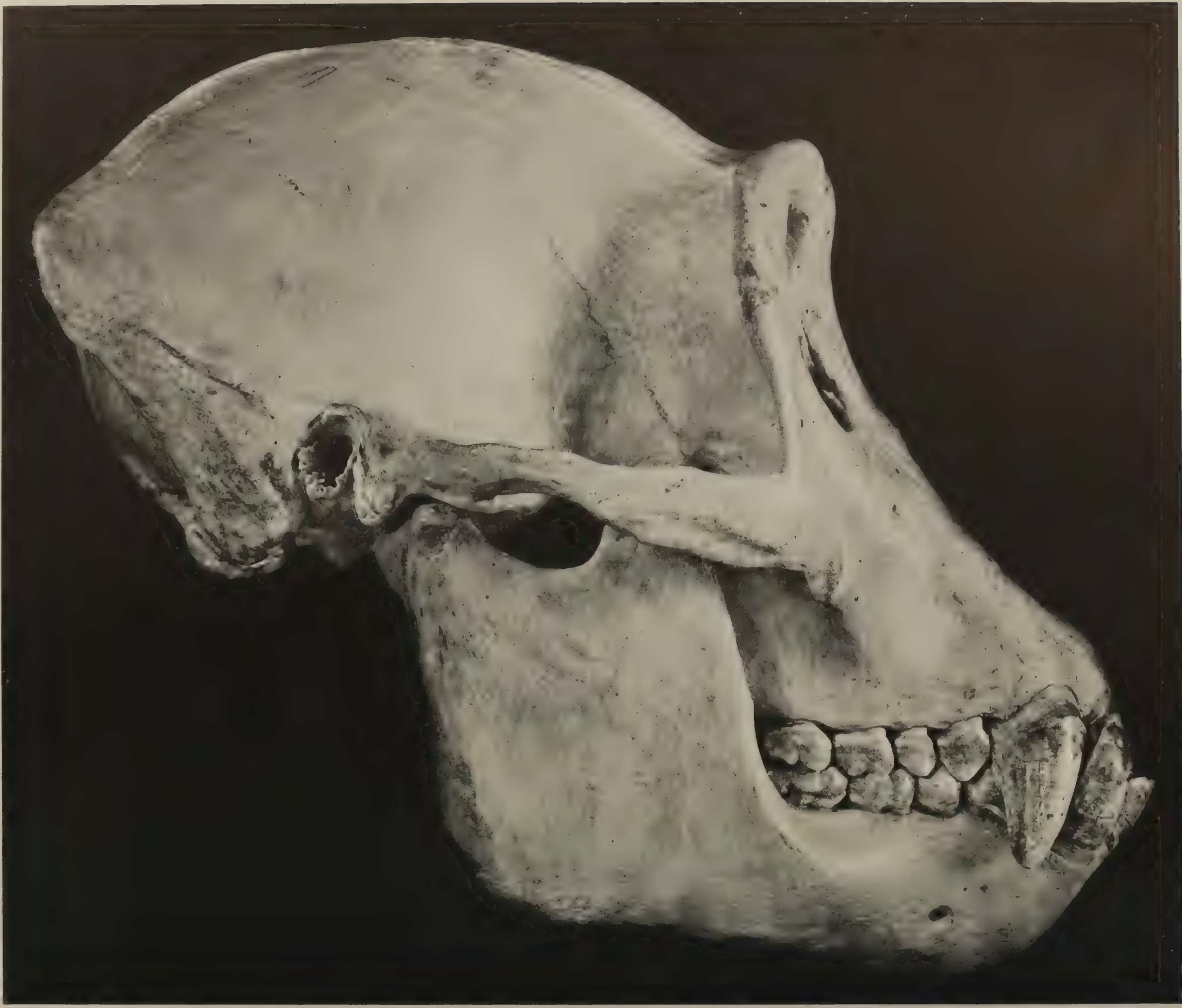
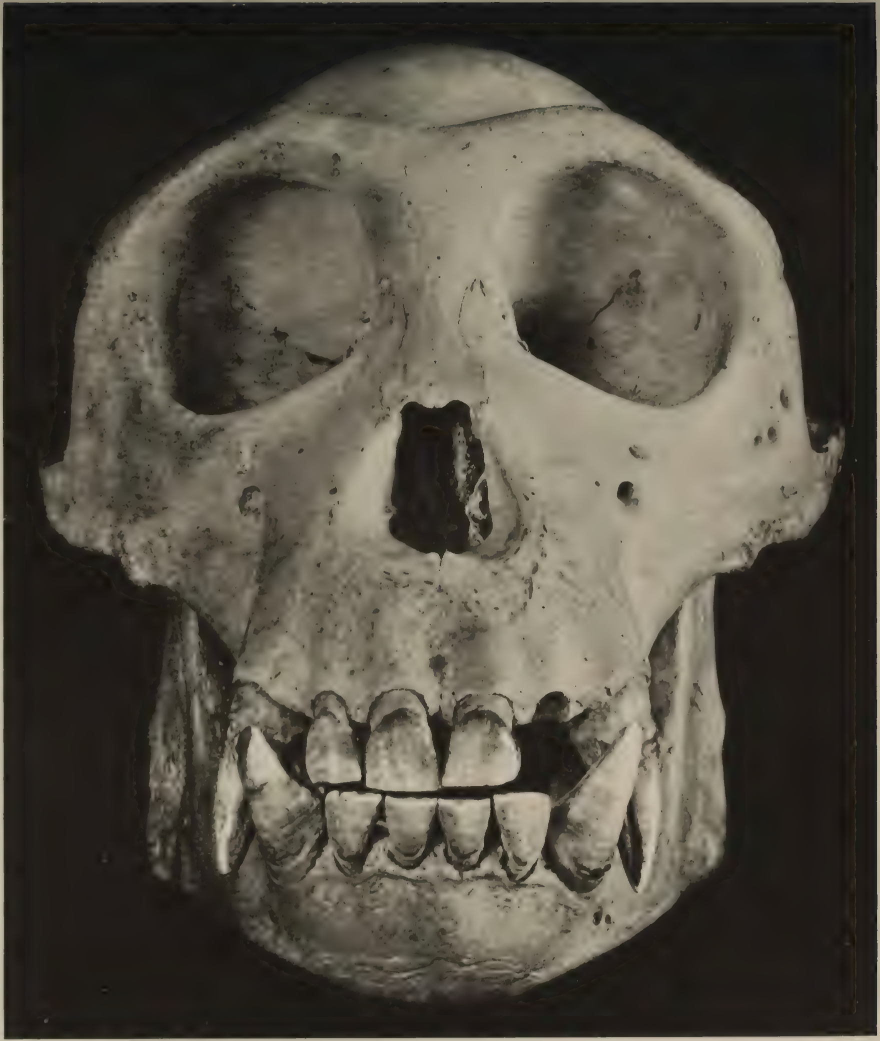
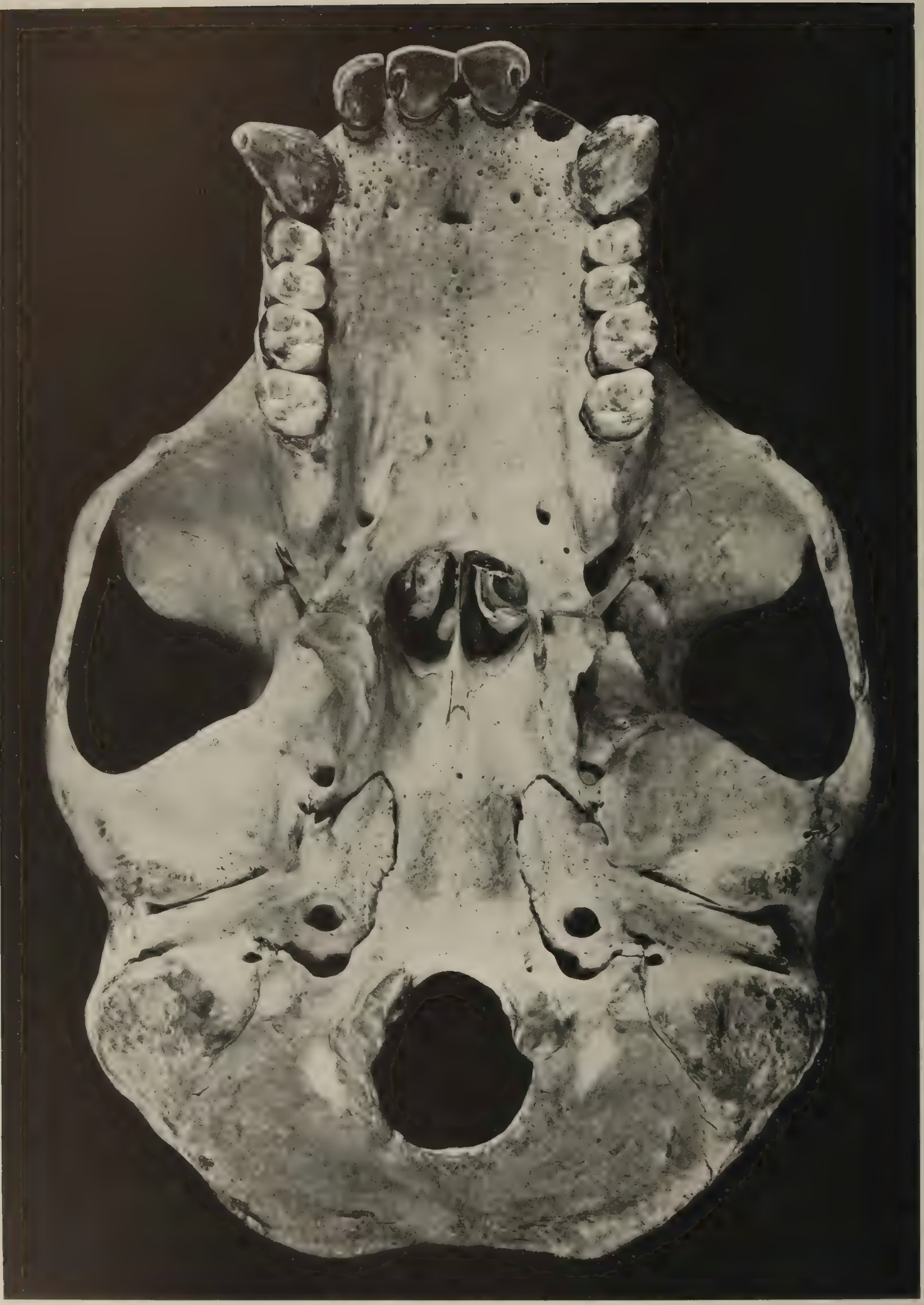
*Only four teeth.





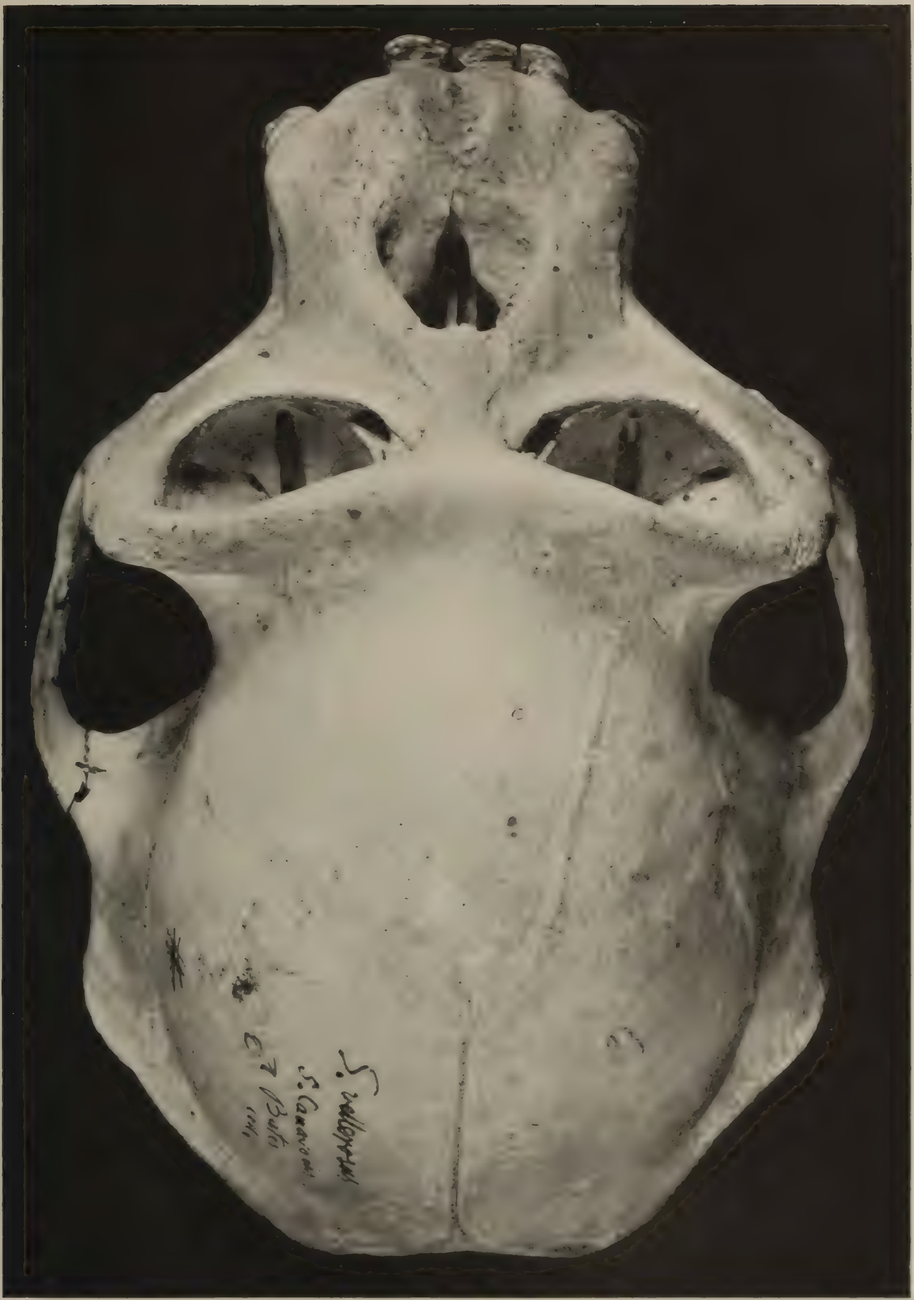
PAN VELLEROSUS.

No. ——— ? Tring. Mus. Coll. 4/5 Nat. Size.



PAN VELLEROSUS.

No. ——— ? Tring. Mus. Coll. ⅘ Nat. Size.


S. vellerosus
S. Cameroons
E. J. Bates

PAN VELLEROSUS.

No. ——— ? Tring. Mus. Coll. ⅘ Nat. Size.

and soft, and the whiskers are rather long and pass under the chin. Forehead is without hairs, but whether there never were any, or they have fallen off, cannot now be told, as the type is in poor condition. It has very protruding lips, but as no skull came with the specimen, this is probably the result of taxidermic effort.

The adult of this species, a fine specimen of which is in the Tring Museum, has forehead and top of head bald, surrounded by black hairs speckled with yellowish white, this color extending above hind neck; back and outer sides of legs and arms at elbows yellowish brown with a red tinge on legs below knee; shoulders and outer side of arms dark brown; forearms and hands blackish brown; feet dark brown; inner side of arms blackish, legs reddish brown; under parts of body blackish brown; short, dark brown beard on chin; ears flesh color.

PAN FUSCUS (Meyer).

Anthropopithecus fuscus Meyer, Abhandl. und Ber. Zoologisch. und Anthrop. Mus. Dresd., 1894-95, No. 14, p. 7; Matschie, Sitzungsb. Ges. Naturf. Freund., Berlin, 1904, p. 64.

Simia pygmæus fuscus Rothsch., Proc. Zool. Soc. Lond., 1904, p. 430.

Simia troglodytes Jent., Notes Leyd. Mus., 1888, p. 2. (Ex Liberia).

Type locality. Unknown.

Geogr. Distr. Gold Coast? West Africa.

Genl. Char. Hair in young and adults mostly reddish; hair on chin whitish; hair on head springing from a central whorl; whiskers moderately long; face and ears flesh color. Similar to CALVUS in color.

Meyer (l. c.) gives a description and figure of a young brown female Chimpanzee living at the time in the Zoological Gardens, Dresden, and says in a footnote if an adult brown Chimpanzee exists, he would propose the name of *fuscus* for it.

The specimen figured by Meyer, and which must be regarded as the type, is not in the Dresden Museum and nothing is known of it. Even the country from which the individual came was not given, if it was ascertained.

The following specimens are those referred to on page 233. As they were all procured in Cameroon, one is somewhat doubtful about so many Chimpanzees existing within so comparatively a restricted range and yet maintaining a specific distinctness. The material in the Berlin Museum was not sufficient to determine this fact, and it will require more specimens of different ages before a satisfactory decision can be reached.

PAN ——— ?

Specimen from Basho, Northwestern Cameroon.

Genl. Char. Differs from P. CHIMPANSE in having the face of female all flesh color, and of male all dark brown, no difference between the color of the nose and rest of the face, and no white above eyes; whiskers very short, not going under chin; chin white. Pelage entirely black.

Measurements. Height, 720; arm, 650, (flat skin). Skull: *Male.* Total length, 211.3; occipito-nasal length, 153; intertemporal width, 69.7; length of braincase, 124.1; width of braincase, 101; Hensel, 137.4; zygomatic width, 134.3; median length of nasals, 25.3; length of rostrum, 75.8; width of rostrum at canines, 61.2; palatal length, 72.4; length of upper molar series, 41.7. No mandible.

Skull: *Female.* Total length, 190.3; occipito-nasal length, 139.4; intertemporal width, 69.3; length of braincase, 116.4; width of braincase, 94.2; Hensel, 123.2; zygomatic width, 112.4; median length of nasals, 24.7; length of rostrum, 66.9; width of rostrum at canines, 56; palatal length, 63.5; length of upper molar series, 41.9; length of mandible, 127.1; length of molar series, 47.5.

There are two specimens, flat skins, in the Berlin Museum from Basho, male and female. The male has all the face dark brown, or blackish brown, and the female has the face flesh color. The male has black hands and feet while those of the female are flesh color. It seems more reasonable to consider these as sexes of the same species, than to believe that two distinct species of Chimpanzees would be found dwelling in the same place. The hair is long and rather thick, of a jet black color, rather long on sides of head. They resemble P. CHIMPANSE differing in certain ways as mentioned above.

PAN ——— ?

Specimen from Dunne, interior of Southern Cameroon.

Genl. Char. Size large; color mostly various shades of brown; forehead bald.

Color. Forehead bald, extending backward farthest in the center; whiskers rather long, extending apparently beneath the chin, but the hair on this part has slipped. Top of head, whiskers, arms, neck and upper part of back blackish brown, becoming more black than brown on hands; lower back and rump wood brown; under parts and inner side of thighs black; outer side of thighs very dark reddish brown; feet nearly black. Ex specimen Berlin Museum.

Measurements. Specimen a flat skin, dimensions not reliable. Skull: total length, 212.1; occipito-nasal length, 142.8; intertemporal width, 67.1; breadth of braincase, 95; length of braincase, 111.5; Hensel, 148.1; zygomatic width, 136; median length of nasals, 24.5; length of rostrum, 80; width of rostrum at canines, 64.5; palatal length, 82.8; length of upper molar series, 47.9; length of mandible, 152.8; length of lower molar series, 51.3. Ex specimen Berlin Museum.

This is a large Chimpanzee belonging to the bald-headed group, with a back much lighter than the rest of the body and limbs, and comes from the same district in which the large gray Gorilla ex MOKBE, Cameroon, is found. The skull is short and rather heavy, with the facial region about equal in length from the anterior edge of the orbital ridge to the occiput. The braincase is broad and rounded, and the rostrum is very broad for its length, the greatest width being at the canines. The orbital ridge is straight, but with a slight depression behind and overhangs the orbits only slightly. The orbits are round, and the narial opening is large, heart shaped and very broad anteriorly. The palate is broad, equal in width throughout its length and the teeth are moderately large, with the tooth rows straight. Pterygoid fossa short and broad and basioccipital quite broad. Its place seems to be near P. CALVUS.

PAN ——— ?

Specimen from Lomie, interior of Cameroon.

Genl. Char. Similar to P. AUBRYI, but much paler on lower back and legs.

Color. Top of head broccoli brown; sides of head blackish brown; cheeks reddish brown grading into grayish brown; back of head and neck, dark brown, becoming blackish between the shoulders; middle of back to rump, and legs, pinkish buff; arms, hands and under parts brownish black, the hairs being mostly black with reddish brown ones intermingled; feet broccoli brown paler than the legs. Ex specimen Berlin Museum.

Measurements. Height, 840; arms, 750, (flat skin). Skull: total length, 200; occipito-nasal length, 153; intertemporal width, 68.4; length of braincase, 119.4; width of braincase, 103; Hensel, 137.8; zygomatic width, 130.5; median length of nasals, 28; length of rostrum, 72.4; width of rostrum at canines, 60.7; palatal length, 70.8; length of upper molar series, 46; length of mandible, 137.6; length of lower molar series, 51.8. Ex specimen Berlin Museum.

APPENDIX.

SUBORDER ANTHROPOIDEA.

FAMILY CALLITRICHIDÆ.

GENUS ŒDIPOMIDAS.

ŒDIPOMIDAS SALAQUIENSIS Elliot.

Œdipomidas salaquiensis Elliot, Bull. Am. Mus. Nat. Hist., 1912, p. 137.

Type locality. Forest of the River Salaqui, northwestern Colombia. Type in American Museum of Natural History, N. Y.

Color. Adult male. Face and sides of head covered with very short white hairs, skin black; throat naked, black; middle of forehead to crown white, the hairs starting at a point just above and widening as they go to crown; crown and nape dark chestnut, hairs ringed with black; forearms white, rest of arms, shoulders, entire upper parts and outer side of legs to ankles, black mottled with cream buff; inner side of arms, lower part of throat and chest cream color, rest of under parts of body and inner side of legs deep buff yellow; tail above jet black, a few chestnut hairs at the root, beneath chestnut at root, remainder jet black; hands and feet gray; ears black, naked.

Measurements. Total length, 690 mm.; tail, 395; foot, 75. Skull: total length, 59.7; occipito-nasal length, 50; Hensel, 37.4; zygomatic width, 36.1; intertemporal width, 24.5; median length of nasals, 7.3; breadth of braincase, 27.6; palatal length, 18; length of upper molar series, 10; length of mandible, 31.9; length of lower molar series, 12.4. Ex type American Museum of Natural History, N. Y.

This species, while having a general resemblance to Œ. GEOFFROYI, is larger, and differs in the coloring of its coat in the following respects: the crown and nape are dark chestnut instead of burnt umber, the mottling is cream color on inner side of arms and chest, and buff yellow on rest of under parts and inner side of legs instead of all these parts being pure white. The cranial characters are very different. The skull is much larger in its dimensions; the palate is wider and longer; the bullæ longer and higher, the zygomatic arch longer and wider; the braincase broader, and occipital region broader and more rounded; nasals broader and longer; mandible much heavier, the ascending ramus much broader at line of tooth row, being 13.1 mm. to 11.5 of Œ. GEOFFROYI, with the angle more prominent. The orbits are much wider the outer dimension across both being 27.5 for the present species to 25.4 for Œ. GEOFFROYI.

The present species was procured by Mrs. E. L. Kerr, (who also discovered the striking SENIOCEBUS METICULOSUS lately described) in the forest of the River Salaqui, among the coast mountains of northwestern Colombia. It would appear to be a larger animal than its relative from Costa Rica and Panama. It is not probable that the ranges of the species approach each other, as the Salaqui River is a considerable distance to the south of the northern border of Colombia.

GENUS CERCOPITHECUS.

CERCOPITHECUS MIDAS EGENS (Thomas).

Leontocebus midas egens Thos. Ann. Mag. Nat. Hist., 8th Ser., X, 1912, p. 44.

Type locality. Obidos, Lower Amazon. Type in British Museum.

Genl. Char. Similar to C. MIDAS.

Color. "Back more strongly suffused with dark buffy, generally throughout, and in all cases across the shoulders. Black of the head less deep and less continued down on to the back, the grizzled buffy of the back going further forward on the nape. Hands instead of being wholly 'ochraceous' or 'ochraceus buff,' only of this color on the outer half of the wrist, the metacarpus and digits being decidedly lighter colored, 'buff' or 'cream buff.' Feet also rather lighter than in *midas,* though the difference is less conspicuous."

Measurements. "Head and body, 229; tail, 384; foot, 65; ear, 40." (Collector). "Skull: greatest length, 49.5."

I have not seen this specimen.

Memorandum GALAGO COCOS.

The description printed of this species was taken from that published by the author (l. c.), as I had not been able to see the type. Lately, through the kindness of the Director of the National Museum, Dr. Rathbone, the type was forwarded to me, and I found that an error had been committed and the chin and throat wrongly described. In Mr. Heller's paper these parts are given as *blackish,* when it should have been stated "chin and throat *white,*" the base of the fur being plumbeous.

A work that is extremely rare in Europe and America has very lately been acquired for the Library of the American Museum of Natural History in New York, viz., "Memoires concernant l'Histoire naturelle de l'Empire Chinois par des Pères de la compagnie de Jésus," and published in "Chang-Hai." In the fourth volume of the series is a description of a Tarsius from Mindanao, Philippine Archipelago, by P. M. Heude, S.J., as follows:

SUBORDER LEMUROIDEA.

FAMILY TARSIIDÆ.

GENUS TARSIUS.

Tarsius carbonarius Heude, 4, 1899, p. 164, pl. XXXIII, figs. 4, 5, 6, 7.

Type locality. "Golfe de Davao, et vallée du rio Pulangui," Island of Mindanao, Philippine Archipelago.

Descr. "Cette espèce se distingue de l'espèce type, par la forme de ses premolaires supérieures, le développement des molaires, l'étroitesse de la longueur plus grande du crâne. On m'a dit *qu'il mangeait du charbon.*"

The author compares this Mindanao example with one from Java, from which it is of course quite distinct, but he is obviously ignorant of T. PHILIPPINENSIS Meyer, also from Mindanao, described in 1894, five years previously, from which his proposed new species cannot evidently be separated. It will be noticed that in the lines I have italicized the author repeats the fable of these animals eating charcoal!

T. carbonarius Heude will therefore become a synonym of T. PHILIPPINENSIS Meyer.

GALAGO COCOS Heller.

Galago moholi cocos Heller, Smith. Misc. Coll., 60, 1912, p. 1.

Type locality. Mazeras, British East Africa. Type in United States National Museum.

Genl. Char. Color above on dorsal surface, cinnamon; base of hair on under parts plumbeous; last upper molar large.

Color. Nose broccoli brown with a white line on center to middle of forehead; cheeks grayish buff; lips whitish; occiput umber brown; dorsal surface cinnamon; chin, throat and sides of neck blackish; under parts buffy-yellow, hairs plumbeous at base; chest ochraceous; limbs buffy-yellow; tail cinnamon, darkest at tip; ears naked, blackish.

Measurements. Total length, 353; tail, 203; foot, 55; ear, 38. Skull: occipito-nasal length, 41; zygomatic width, 28; intertemporal width, 16.5; length of nasals, 10.8; length of upper molar series, 12.3; length of mandible, 25; length of M^3, 3.2; width, 3.2.

This form was described as a subspecies of *G. moholi,* but as this is a synonym of G. SENEGALENSIS a West African species, it was necessary to remove it from that category, and as it is evidently not a subspecies of any East African Galago, I have given it specific rank.

SUBORDER ANTHROPOIDEA.

FAMILY CEBIDÆ.

GENUS LAGOTHRIX.

Lagothrix lugens Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 193.

In a collection of mammals lately received at the American Museum of Natural History, from Colombia, were a number of examples of this species of different ages obtained at La Palma, Huila, at an elevation of 5,500 feet. These specimens would seem to prove that the type in the British Museum was in immature pelage, and that the adult is a gray animal with the head bistre. Some specimens are like the type, and one is intermediate between the type and the adult, with the gray appearing on the lower back, rump and tail. The adult may be described as follows:

Lagothrix lugens, adult male. Top and sides of head sepia; forehead pale wood brown; occiput and hind neck dark mars brown; upper part of back mouse gray tinged with brown, rest of back, rump, outer side of legs and feet dark smoke gray; outer side of arms similar to upper back; hands like arms with a pale brownish patch below fingers; chin pale cinnamon; lower part of throat and upper part of chest chestnut; flanks gray like back; rest of under part of body, under side of arms and legs jet black; tail above gray like rump, beneath black. The skull has the same peculiar nasals with the anterior half projecting at a right angle to the posterior portions.*

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*As the last two species became known to the author only lately, it has not been possible to arrange them in the Appendix in their proper order.

CEBUS CURTUS Bangs.

Cebus curtus Bangs, Bull. Mus. Comp. Zool. Cambr. Mass., XLVI, 1905, p. 91.

Type locality. Gorgona Island, off southern coast of Colombia, S. A. Type in Museum of Comparative Zoology.

Genl. Char. Similar in color to C. CAPUCINA (Linn.) but hands and feet smaller, tail shorter, and last molar smaller.

Measurements. Total length, 753; tail, 420; foot, 115. Skull: occipito-nasal length, 80.4; intertemporal width, 38.4; zygomatic width, 58.4; palatal length, 33.6; length of upper tooth row, 25; length of mandible, 58; length of lower tooth row, 28. Ex type in Museum of Comparative Zoology.

Very lately, through the kindness of my friend Mr. O. Bangs, I have been able to examine the type and a young example of this monkey. It differs from C. CAPUCINA as stated above, and agrees with *C. c. nigripectus* in its shorter tooth row, and small last molar. The short tail in each example appears to be natural, but it will require more specimens from the island before it can be satisfactorily determined whether or not this member has been abbreviated by the animal itself or by some other agent. The tails of both examples are equally short.

APPENDIX 2

In Volume I, on page 324, is a description of CALLITHRIX GOELDI founded on a specimen in the collection of the British Museum. This example was in poor condition and without a skull, and was reluctantly admitted as a distinct species, although it could not be assigned to any known form. Lately Mr. Thomas received some examples of mammals from the Para Museum, among which was a C. GOELDI with its skull. This proves to have a remarkable interest and establishes the fact that this monkey is not only distinct from all others, but also represents a distinct genus to be assigned as follows:

FAMILY CEBIDÆ

Subfamily. Callimiconinæ

GENUS CALLIMICO.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

Skull has a high and rounded braincase, brow ridges not prominent; with superior outline from nasals to occiput convex; malar vertically expanded; mandible with chin and incisor as in the CEBIDÆ. Orbits more slanting than in CALLITHRIX, but pterygoids like those of that genus. Molars like *Callithrix*, but broader and without hypocone; lower incisors and canines normal. Externally the animal resembles the Marmosets, with long, curved compressed claws.

The species will stand as follows:

CALLIMICO GOELDI (Thomas).

Callithrix goeldi Thos., Ann. Mag. Nat. Hist., XIV, 1904, 7th Ser., p. 100.

Callimico snethlageri Ribeiro, Bras. Runds., 1911, p. 21.

Callimico goeldi Thos., Ann. Mag. Nat. Hist., XI, 1913, 8th Ser., p. 131.

Subfamily. Alouattinæ

GENUS ALOUATTA.

Alouatta palliata inconsonans Goldman

Alouatta palliata inconsonans Gold., Smith. Misc. Coll., 60, 1913, p. 17.

Type locality. Cerro Azul, near the headwaters of the Charges River, Panama, Elevation 2,500 feet. Type in United States National Museum.

Genl. Char. Like *A. palliata* but black color less suffused with brownish or rufous.

Color. Upper parts varying from pure black to black finely and usually rather inconspicuously mixed with buff over most of dorsum leaving head and rump pure black, under parts in general thinly haired, black or dark brownish, becoming lighter through varying shades from burnt umber of Ridgway to brownish ochraceous on the long hairs overhanging lower part of sides; chin, arms, legs and tail pure black. Skull with braincase broader posteriorly; zygomata usually more squarely spreading posteriorly; supra-occipital protuberance shorter and more projecting; interpterygoid fossa broader, bullæ flatter; premolars narrower.

Measurements. "Total length, 1,272; tail vertebræ, 71.5; foot, 143. Skull (Type): Greatest length, 123.5; zygomatic breadth, 87.2; length of nasal, 21.8; anterior width of nasals at median constriction, 8; interorbital breadth, 12.2; palatal length, 46.8; maxillary tooth row, 29.4; width of crown of third upper premolar, 7.7; antero-posterior extent of supra-occipital protuberance (from lamboid suture), 14.1."

I have not seen this example, but it seems to possess only slight differences from *A. palliata.*

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